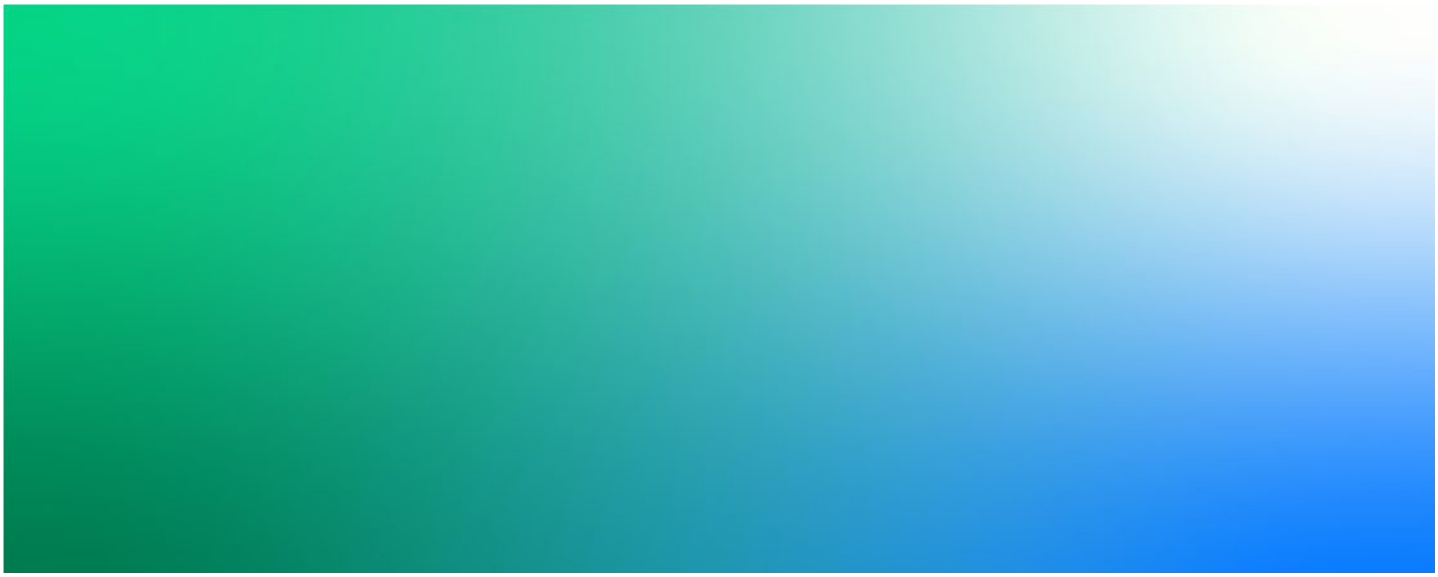
Jacobs

San Mateo Creek Basin Groundwater Site: Central Study Area Remedial Investigation/Feasibility Study

Health and Safety Plan

March 2021

San Mateo Creek Basin Central Study Area Working Group



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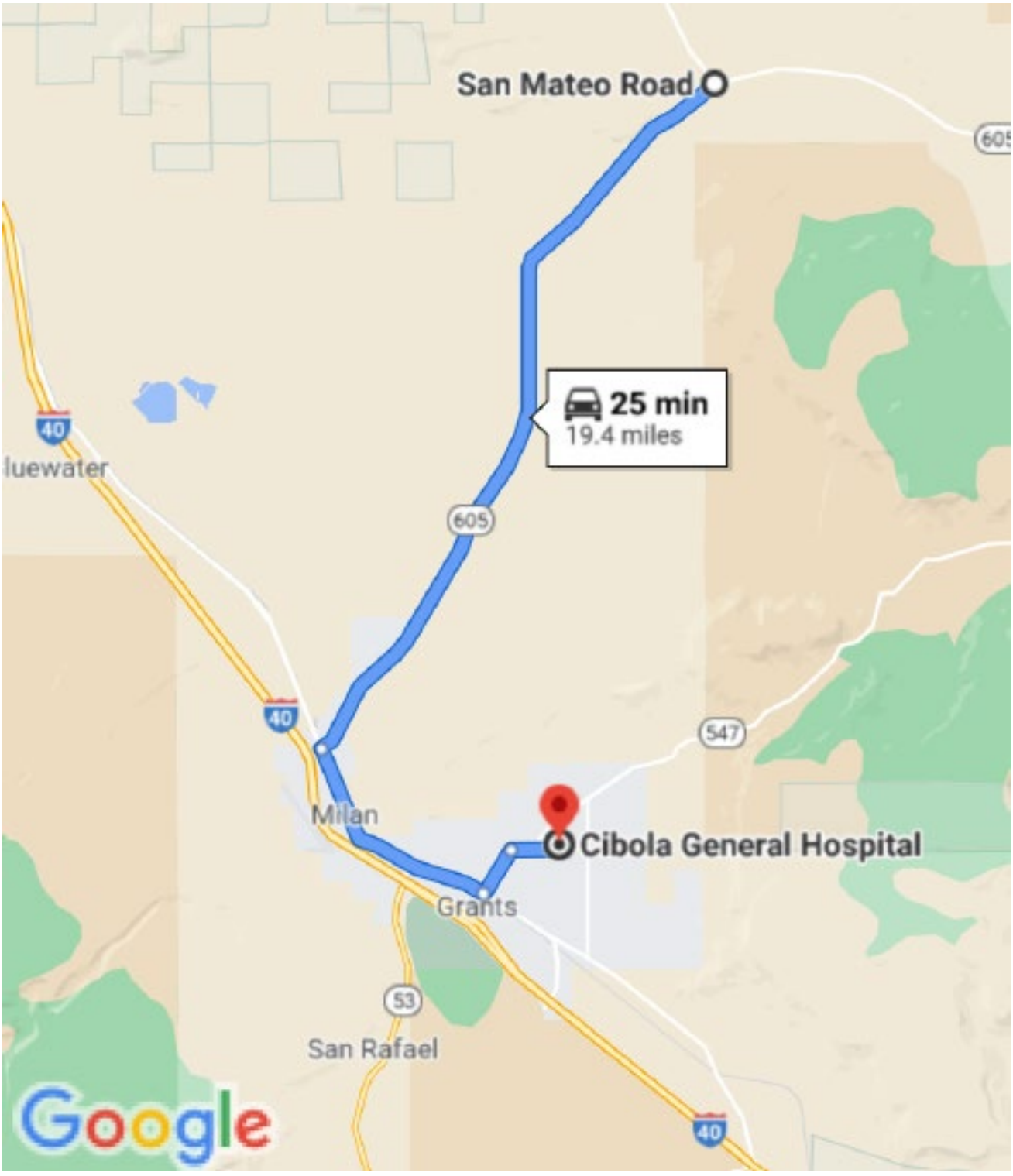
Emergency Contacts

24-hour Jacobs Injury Reporting: 1-888-449-7787 Global Assistance and Response Hotline +1-443-221-6281	
Medical Emergency: 911	**Non-Emergency Medical Injuries** WorkCare: 1-888-449-7787 Call no matter how minor the injury as soon as possible
Fire/Spill Emergency: 911 Facility Fire Response: 911 Local Fire Department: 911	**Security and Police**: **911** Local Police: 911
Utilities Emergency Phone Numbers Water: 911 Gas: 911 Electric: 911	**Automobile Accidents** **Rental**: Vehicle Accident Form required to be sent to AutoClaims@jacobs.com (see Vehicle Accident Guidance attached to this plan) **Fleet Vehicle**: Karyna Zarate 281-721-8634
Project Manager Name: Jeff Minchak/ABQ Phone: 505-379-3222 (cell)	**Human Resources Department** Phone: Employee Connect toll-free number 1-877-586-4411 (U.S. Puerto Rico and Canada)
Jacobs Responsible Health and Safety Manager (RHSM) Name: Joshua Painter/DEN Cellular Number: 303-993-9274	**Media Inquiries Corporate Strategic Communications** Name: Lorrie Paul Crum Phone: (720) 286-0255
Jacobs Radiation Services Group Radiation Safety Officer Name: Tony Mason, CHP, RRPT Phone: 435-655-1009 (cell)	**Radiological Operations Manager** Name: Kevin Smallwood, RRPT Phone: 970-250-5441 (cell)
Safety Coordinator (SC-HW) Name: Geophysical Survey: Jessica Lin/818-448-0342 Drilling Program: McKenze Booth/ 262-227-2781	**Federal Express Dangerous Goods Shipping** Phone: 800/238-5355
Jacobs Project Environmental Manager Name: Lisa Schwan/ATL Cellular Number: 678.530.4312	**CHEMTEL (hazardous material spills)** **Phone: 800/255-3924**
Facility Alarms: NONE	Evacuation Assembly Area(s): Assemble at field vehicle to determine next action.
Facility/Site Evacuation Route(s): Dependent on location, team will determine prior to leaving site.	

Directions and Map to Local Hospital	
Hospital Name/Address Cibola General Hospital 1016 East Roosevelt Avenue Grants, NM 87040 505-287-4446 **See map on the following page.**	From Site, proceed south on NM 605 and turn left (east) onto NM 122 (Santa Fe Ave.), proceed east to First Street (at Pizza Hut) and turn left (north), proceed to end of road and turn right (east) onto East Roosevelt Ave, hospital is 0.75-mile on left.

HOSPITAL ROUTE MAP

SMCB CSA to Cibola General Hospital



Incident Notification and Reporting

- Notify and submit reports to client as required in contract.
- Serious Incidents must be reported immediately in accordance with Jacobs Standard of Practice, *Serious Incident Reporting Process*. Serious incidents are those that involve any of the following:
  - Work-related death or life-threatening injury or illness of a Jacobs employee, subcontractor, or public
  - Kidnapped/missing person
  - Acts or threats of terrorism
  - Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in excess of $500,000 in damage
  - Spill or release of hazardous materials or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community, or the environment

In the event of an emergency, immediately call 911.

- Severe bleeding
- Loss of consciousness
- Chest pain
- Broken bones

- All other injuries or illness (even those that are minor and may only require first aid) that occur at work, while on business travel, or commute must be reported immediately to your supervisor.

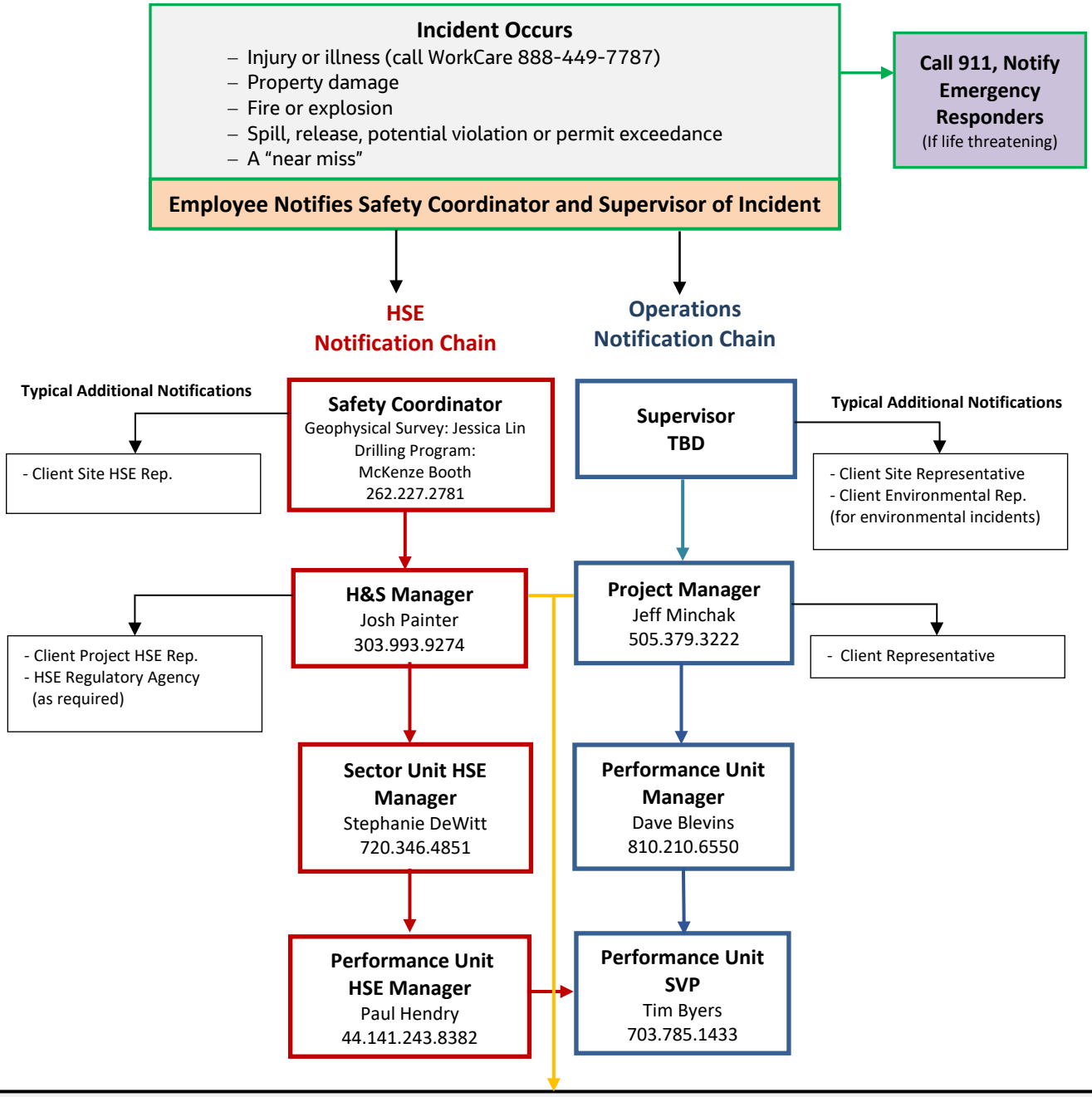
After informing their supervisor, the injured employee calls Jacobs' contracted occupational injury nurse
24-hour Jacobs Emergency Nurse Assistance
1-888-449-7787

- The occupational injury nurse listens to the injured employee to understand the injury/illness.
- Employee is provided guidance on appropriate treatment options (triage).
- Appropriate treatment details are handled by the occupational injury nurse and Human Resources Groups.
- Nurse communicates and troubleshoots with and for employee through full recovery.
- Complete an Intelex report and notify the Health and Safety Manager.

INCIDENT NOTIFICATION PROCEDURE

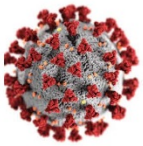
Verbal Incident Notification *– to be implemented as soon as possible after an incident.*

Verbal incident notification is made to **both the HSE and the Operations chains** to the indicated group depending on the severity, and any project, geographic, or client specific notification and reporting requirements as shown below. The HSM will complete an Intelex report.



Third Party Incidents –
Incidents outside of our contractual obligations do not need to be reported UNLESS they are serious and may affect Jacobs or our work. The Project and Sector HSE Managers will determine the level of communication necessary for third party incidents.

What you should know about COVID-19 to protect yourself and others



Know about COVID-19

- Coronavirus (COVID-19) is an illness caused by a virus that can spread from person to person.
- The virus that causes COVID-19 is a new coronavirus that has spread throughout the world.
- COVID-19 symptoms can range from mild (or no symptoms) to severe illness.

Know how COVID-19 is spread

- You can become infected by coming into close contact (about 6 feet or two arm lengths) with a person who has COVID-19. COVID-19 is primarily spread from person to person.
- You can become infected from respiratory droplets when an infected person coughs, sneezes, or talks.
- You may also be able to get it by touching a surface or object that has the virus on it, and then by touching your mouth, nose, or eyes.

Protect yourself and others from COVID-19

- There is currently no vaccine to protect against COVID-19. The best way to protect yourself is to avoid being exposed to the virus that causes COVID-19.
- Stay home as much as possible and avoid close contact with others.
- Wear a cloth face covering that covers your nose and mouth in public settings.
- Clean and disinfect frequently touched surfaces.
- Wash your hands often with soap and water for at least 20 seconds, or use an alcohol-based hand sanitizer that contains at least 60% alcohol.

Practice social distancing

- Buy groceries and medicine, go to the doctor, and complete banking activities online when possible.
- If you must go in person, stay at least 6 feet away from others and disinfect items you must touch.
- Get deliveries and takeout, and limit in-person contact as much as possible.

Prevent the spread of COVID-19 if you are sick

- Stay home if you are sick, except to get medical care.
- Avoid public transportation, ride-sharing, or taxis.
- Separate yourself from other people and pets in your home.
- There is no specific treatment for COVID-19, but you can seek medical care to help relieve your symptoms.
- If you need medical attention, call ahead.

Know your risk for severe illness

- Everyone is at risk of getting COVID-19.
- Older adults and people of any age who have serious underlying medical conditions may be at higher risk for more severe illness.

CS 314937A 04/15/2020

cdc.gov/coronavirus

Contents

ATTACHMENTS

Acronyms and Abbreviations

°C	degrees Celsius
°F	degrees Fahrenheit
µrem/hr	microroentgen equivalent man per hour
3R	recognize, retreat, report
AHA	activity hazard analyses
ALARA	as low as reasonably achievable
ANSI	American National Standards Institute
AOC	Administrative Settlement Agreement and Order on Consent
bpm	beat(s) per minute
CDC	Centers for Disease Control
COC	constituent of concern
cpm	count(s) per minute
CPR	cardiopulmonary resuscitation
DEET	N,N-diethyl-meta-toluamide
EM	environmental manager
EPA	U.S. Environmental Protection Agency
eV	electron volt
EZ	exclusion zone
FCR	field change request
FTL	field team leader
GFCI	ground fault circuit interrupter
GHS	globally harmonized system
HazCom	hazard communication
HAZWOPER	Hazardous Waste Operations and Emergency Response
HEPA	high-efficiency particulate air
HS&E	health, safety, and environment
HSM	health and safety manager
HSP	health and safety plan
HW	HAZWOPER
IDLH	immediately dangerous to life and health
IDW	investigation-derived waste
ISEA	International Safety Equipment Association
kV	kilovolt(s)
mg/m^3	milligram(s) per cubic meter

MPPEH	material potentially presenting an explosive hazard
mrem/yr	milliroentgen equivalent man per year
MW	monitoring well
NA	not applicable
NORM	naturally occurring radioactive material
OJT	on-the-job training
OSHA	U.S. Occupational Safety and Health Administration
pCi/L	picocurie(s) per liter
PIP	photoionization potential
PM	project manager
PPE	personal protective equipment
PTSP	pre-task safety plan
RHSM	responsible health and safety manager
RSO	radiation safety officer
SC	safety coordinator
SDS	safety data sheet
SOR	safety observation report
TBD	to be determined
TEDE	total effective dose equivalent
TLV	threshold limit value
WBGT	wet bulb globe thermometer
WI	work instruction
WPS	worst potential severity

Approval

This Health and Safety Plan (HSP) has been written for use by Jacobs employees and Jacobs subcontractors only. Jacobs claims no responsibility for its use by others unless that use has been specified and defined in project or contract documents. The plan is written for the specific project and site conditions and identified scope(s) of work and must be amended if those conditions or scope(s) of work change.

By approving this HSP, the Responsible Health and Safety Manager (RHSM) certifies that the personal protective equipment has been selected based on the project-specific hazard assessment.

ORIGINAL PLAN

Original Plan Written by: Aleeca Forsberg **Date**: March 2, 2020

RHSM Approval: Josh Painter **Date**: March 3, 2020

Project Manager Approval: **Date**:

Jeffrey Minchak March 5, 2020

REVISIONS:

Revisions Made By: Aleeca Forsberg **Date:** March 11, 2021

Description of Revisions to Plan: Updated to include names and contact information for personnel in defined roles. Revised the hospital route map and incident and reporting flow chart. Include hantavirus hazards for various field tasks.

Revisions Approved By: Jeffrey Minchak **Date**: March 12, 2021

Revisions Made By: Aleeca Forsberg/Jeff Minchak **Date:** June 2, 2020

Description of Revisions to Plan: Updated to include all components of the Remedial Investigation/Feasibility Study (RI/FS) field work.

Revisions Approved By: Josh Painter **Date:** June 3, 2020

Revisions Made By: **Kevin Smallwood, Mike Witmer** **Date:** May 6, 2020

Description of Revisions to Plan: Added radiation protection program updates.

Revisions Approved By: Tony Mason, CHP **Date:** May 8, 2020

1. Applicability

For purposes of this document, Jacobs Core Standards, Standards of Practice (SOPs), may still be referenced. Reference to Jacobs employees may still be referenced if the prime contract is held by Jacobs.

This Health and Safety Plan (HSP) applies to:

- All Jacobs staff, including subcontractors and tiered subcontractors of Jacobs working on the site.
- All visitors to Jacobs construction or remediation sites in the custody of Jacobs (including visitors from the client, the government, the public, and other staff of any Jacobs company).

In addition, subcontractors and tiered subcontractors shall also follow any of their company health, safety, and environment (HS&E) programs, site-specific HSPs, and activity hazard analyses (AHAs).

This HSP does not apply to the third-party contractors, their workers, their subcontractors, their visitors, or any other persons not under the direct control or custody of Jacobs.

This HSP defines the procedures and requirements for the health and safety of Jacobs staff, Jacobs subcontractors, and visitors when they are physically on the work site. The work site includes the project area (as defined by the Administrative Settlement Agreement and Order on Consent (AOC) between the U.S. Environmental Protection Agency (EPA) and the Client and the project offices, trailers, and facilities thereon).

This HSP will be kept onsite during field activities and will be reviewed as necessary. The HSP will be revised as project activities or conditions change or when supplemental information becomes available. The HSP adopts, by reference, the Jacobs work instructions (WIs), as appropriate. In addition, applicable requirements in the Jacobs HS&E Handbook (the Handbook) will be implemented. The Handbook will be available as an electronic document in the field. The HSP may adopt procedures from the project work plan and any governing regulations. If there is a contradiction between this HSP and any governing regulations, the more stringent and protective requirement shall apply.

All Jacobs staff and subcontractors must complete the employee signoff form (in Section 21 of this HSP) to acknowledge their review of this document. Copies of the signature pages will be maintained onsite by the safety coordinator (SC).

2. General Project Information

2.1 Project Information and Background

Project Number: D3351400 A.CS.EV.31.7	Project/Site Name: San Mateo Creek Basin Groundwater Site: Central Study Area (SMCB-CSA) RI/FS
Client: San Mateo Creek Basin CSA Working Group	Site Address: Adjacent to NM 605, between 5.4 to 13.7 miles north of the intersection of NM 605 and NM 122 (Route 66)
Jacobs Project Manager: Jeff Minchak	Jacobs Office: ABQ
Date HSP Prepared: April 15, 2020	Date(s) of Site Work: Summer 2021 – Fall 2024

2.2 Site Background, Setting, and Map

Homestake Mining Company of California (HMC), Rio Algom Mining LLC, and United Nuclear Corporation, together have voluntary formed the San Mateo Creek Basin (SMCB) CSA Working Group (Working Group). HMC, on behalf of the Working Group, has contracted Jacobs to perform a Remedial Investigation/Feasibility Study (RI/FS) to investigate groundwater conditions in a portion of the SMCB known as the Central Study Area (CSA).

The Site is located within the Grants Mining District, an area of uranium mineralization occurrence approximately 100 miles long and 25 miles wide and within McKinley, Cibola, Sandoval, and Bernalillo Counties. Main site access is via New Mexico State Roads 605 and 509.

The scope of work for the RI/FS, as defined in the AOC, is to characterize groundwater within the CSA, defined to include alluvial groundwater and the bedrock aquifers in San Mateo Creek.

This HSP is inclusive of tasks expected to occur during the field work and was developed in compliance with the U.S. Occupational Safety and Health Administration (OSHA) and EPA requirements, including the Guidance for Conducting Remedial Investigations and Feasibility Studies under Comprehensive Environmental Response, Compensation, and Liability Act and the AOC.

2.3 Description of Tasks

The sections below describe the tasks covered by this HSP. Any additions or changes in scope will require a revision to this HSP; see Change Management below.

Scope of work covered by this HSP includes:

- Site Walks—preliminary site visit(s) to allow for proper field planning
- Radiation surveys for worker health and safety during field work
- Surface geophysical measurements including surveying of the transect locations. This work will involve the use of subcontractors performing geophysical surveys and land surveys to accurately locate the geophysical transects.

- Drilling of soil borings into both the alluvial sediment and bedrock using rotary sonic drilling methods.
- Soil sampling and borehole logging during drilling and borehole advancement.
- Downhole geophysical logging at a subset of soil borings
- Aquifer tests, including packer tests during drilling, and 8-hour step-drawdown and 72-hour constant-rate pumping tests on completed wells
- Installation of groundwater monitoring wells (MWs) at a subset of soil borings
- Abandonment of soil borings not completed as MWs
- Survey of installed groundwater MWs and soil borings
- Quarterly groundwater monitoring for eight consecutive quarters
- Management of investigation-derived waste (IDW)

2.3.1 HAZWOPER-Regulated Tasks

- Borehole Drilling with Rotary Sonic Rig
- Aquifer Testing
- Transportation of IDW
- Quarterly Groundwater Sampling

2.3.2 Non-HAZWOPER-Regulated Tasks

Under specific circumstances, the training/medical monitoring requirements of federal or state Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations are not applicable. The following tasks do not involve exposure to safety or health hazards associated with the hazardous waste operations. HAZWOPER training/medical requirements do not apply for these tasks:

Tasks	Controls
• Site walks/surveying/utility locating** • Surface Geophysical Investigation**	• Brief on hazards, limits of access, and emergency procedures. • Post areas of contamination as appropriate. • Perform air sampling/monitoring as specified in Section 9 of this HSP. • Wear PPE as specified in Section 10 of this HSP.

** With no exposure to site contaminants

Note:
PPE = personal protective equipment

2.4 Change Management

Changes to this HSP shall be documented and approved by the Jacobs RHSM and radiation safety officer (RSO) (for radiological-related changes) for the project. The following are examples of changes that may require a revision to the plan:

- Change in Jacobs staff
- New subcontractor to perform work
- New chemicals brought to site for use
- Change in scope or addition of new tasks
- Change in constituents of concern (COCs) or change in concentrations of COCs
- Change in radiological controls or measures
- New hazards or hazards not previously identified that are not addressed in this HSP

2.5 Changes to Health and Safety Plans

Changes to the HSP shall be documented and accepted by using the Health and Safety Field Change Request (FCR) form (included in Attachment 1) or by resubmitting a revised HSP for acceptance. A revised HSP should be produced when numerous changes (for example, 15 or more not including AHAs) using FCRs have been employed. The Jacobs project manager (PM) and RHSM shall be responsible for the review and acceptance of the FCR, and the RHSM will maintain an FCR log of approved changes. FCRs are not required for safety-related changes that a SC or RHSM would normally make in the field, such as upgrade or downgrade to PPE within pre-established action levels, expansion or reduction of work control zones based on air monitoring results, and similar changes made within the operating parameters of the HSP. The field copy of the HSP shall be kept current by annotating the appropriate section (that is, update to AHA) to indicate that an FCR is in effect; copies of FCRs should be kept with the HSP. The FCR number must be referenced in the HSP and be available for review.

2.6 Daily Safety Meetings and Pre-Task Safety Plans

Safety meetings are to be held with all project personnel in attendance to review the hazards, controls, and required procedures/AHAs that apply for each day's activities as well as to discuss any environmental issues, requirements, and/or best management practices:

- Everyone involved in the day's work must sign a sign-in form to verify they have had a briefing/ attended a meeting.
- Pre-task safety plans (PTSPs) serve the same purpose as general safety meetings, but the PTSPs are completed by individual crews to focus on those hazards posed by their specific work.
- For smaller crews, or for a single activity, the PTSP is often used as a way to document the overall safety meeting.

A copy of the PTSP and daily safety meeting sign-in sheet is included in Attachment 2.

2.7 StepBack Process

(Reference BIAF Global Guide, BIAF-350-G-01, HS&E StepBack Process)

The StepBack process applies to all Jacobs employees and subcontractors that are performing tasks in an office or at a site location. It is a critical thinking process to supplement HS&E planning tools such as the PTSP, AHAs, and this HSP and should be applied at the start of shift, after a break, when the task or location change, when adjacent work may present additional hazards, or any other hazard or change to task is identified. Training for initial roll-out will be provided via 8-hour HAZWOPER refreshers or an online module.

The process is comprised of three key steps:

Identify: Prior to and while executing the task, "StepBack" and identify any new hazards or changes to the environment, including reviewing personal physical and mental preparedness. Ask the questions on the card (see wallet card or the form attached to this plan); if "yes" is the answer to all questions, the task may proceed. If you answer "no" to any of the questions, STOP work and contact your health and safety manager (HSM)/environmental manager (EM). Together you will work through the following steps to identify corrective actions.

Evaluate: Assess the risk associated with the new hazard or change to the environment to understand the level of risk.

Act: Take appropriate action. Engage with project management or supervisors as necessary to identify the risk mitigation measures. Mitigation measures (changes to means/methods, use of different PPE than specified in the AHA, or similar) would require RHSM involvement and potentially revision to the AHA and or HSP.

Completion: After the job has finished ask:

- Did you feel safe doing the job?
- Were others nearby working safely?
- Can any improvements be made next time?

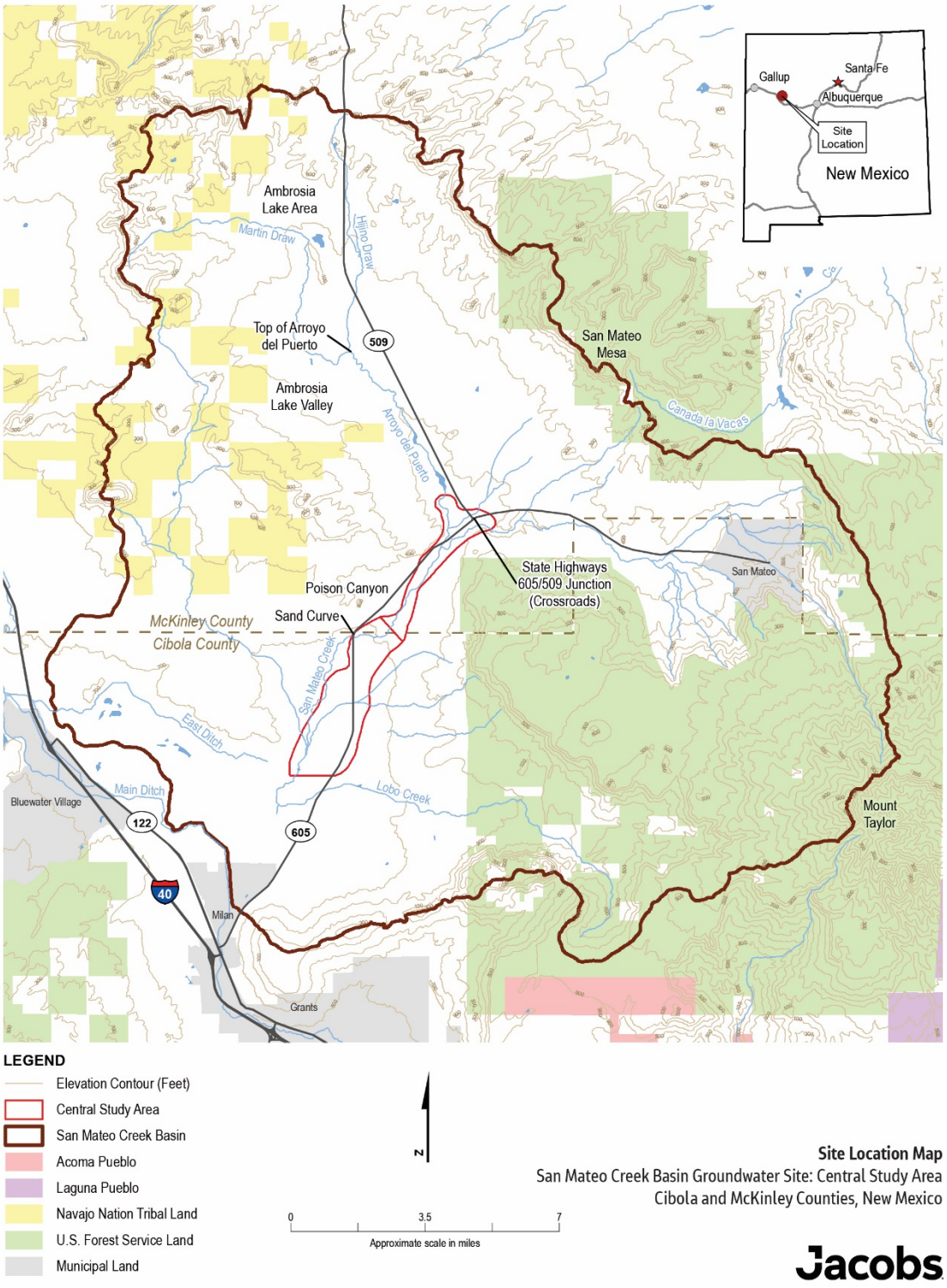
If any of these questions yield a "no" response, follow-up with feedback to the PM, RHSM, or your supervisor.

2.8 Subcontractor HS&E Chartering Meeting

A subcontractor HS&E chartering meeting shall be held with subcontractors performing project field work. The purpose of the meeting is to discuss and agree on key HS&E project requirements and to emphasize and reinforce Jacobs expectations for subcontractor HS&E performance. The target audience includes key Jacobs project staff with HS&E responsibilities (PM, RHSM, SC, RSO, Radiological Operations Manager, Radiological team member, field team leader [FTL]) and key subcontractor staff (PM, supervisors, designated field HS&E contact, drill team leads, foreman). For small-scale projects (small drill crew and limited Jacobs staff), all subcontractor crew members should attend if available. The meeting should be held prior to mobilization with enough time to assure that identified HS&E issues can be addressed before the start of work. Depending on project needs, the meeting can be held either telephonically or in person.

Site Location Map

San Mateo Creek Basin Groundwater Site: Central Study Area
Cibola and McKinley Counties, New Mexico



3. Project Organization and Responsibilities

3.1 Client

Contact Name(s):	Daniel Lattin 775-397-7215 (cell)

3.2 Jacobs

PM	
PM Name:	Jeff Minchak
Office:	ABQ
Cellular Number:	505-379-3222

EM	
EM Name:	Lisa Schwan
Office:	ATL
Cellular Number:	678-530-4312

RHSM	
RHSM Name:	Josh Painter
Office:	DEN
Cellular Number:	303-993-9274

SC	
SC Name:	Geophysical Survey: Jessica Lin Drilling Program: McKenze Booth
Office:	BAO (Oakland) and ABQ
Cellular Number:	818-448-0342/227-262-2781

RSO	
RSO Name:	Tony Mason
Office:	SLC
Cellular Number:	435-695-1009 (cell)

3.3 Jacobs Subcontractors

Subcontractor: TBD	
Contact Name:	
Telephone number:	
Subcontractor Tasks:	

Subcontractor: TBD	
Contact Name:	
Telephone number:	
Subcontractor Tasks:	

Subcontractor: TBD	
Contact Name:	
Telephone number:	
Subcontractor Tasks:	

Subcontractor:	
Contact Name:	
Telephone number:	
Subcontractor Tasks:	

Note:
TBD = to be determined

3.4 Client Contractors

This HSP does not cover contractors that are contracted directly to the client or the owner. Jacobs is not responsible for the health and safety or means and methods of the client contractor's work, and we must never assume such responsibility through our actions (such as advising on health and safety issues).

4. Standards of Conduct

All individuals associated with this project must work injury-free and drug-free and must comply with the standards of conduct stated in the Handbook and comply with all requirements of this HSP. Subcontractors must also comply with the safety requirements of the subcontractor HSP. Forms related to subcontractor safety (Observation Hazard Form and Stop Work Order Form) are included in Attachment 3.

5. Project Hazard Analysis

A health and safety risk analysis (Table 1) was completed for this project. Specific project activities are listed in Table 1 with a designation of who performs the task, Jacobs (J) or subcontractor (S). An AHA was developed for each project activity. AHAs prepared for Jacobs activities are included as an attachment to this HSP.

Jacobs subcontractors are required to provide AHAs specific to their project scope of work for acceptance by Jacobs prior to the start of work. Each subcontractor shall submit AHAs for their field activities, as defined in their scope of work, along with their project-specific safety plan and procedures. Additions or changes in field activities, equipment, tools, or material used to perform work or hazards not addressed in existing AHAs require either a new AHA to be prepared or an existing AHA to be revised.

Table 1. Health and Safety Risk Analysis Table

Associated Hazard Section	Project Activity	Site Walks	Site Surveying/Utility Locating	Radiation Surveys and Monitoring	Mobilization/ Demobilization	Drilling	Well Installation	Borehole Abandonment	Soil and Groundwater Sampling	Aquifer Testing	IDW Management
General Hazards – Refer to General Hazards and Controls in the Jacobs HS&E Field Handbook, Section 7.											
Bloodborne Pathogens		J	J, S	J	J, S	J, S	J, S	J, S	J	J, S	J, S
Chemical and Petroleum Storage						S	S	S			
Driving Safety		J	J, S	J, S	J, S	J, S	J, S	J, S	J	J, S	J, S
Electrical Safety						J, S	J, S	J, S		J, S	
Extended Work Hours & Fatigue Management					S	J, S	J, S	J, S		J, S	J, S
Field Ergonomics and Manual Lifting		J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Field Vehicles		J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Fire Prevention		J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
General Practices and Housekeeping		J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
HazCom		J, S	J, S	J, S	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Knife Use					J, S	J, S	J, S	J, S	J, S	J, S	J, S
Lighting		J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Personal Hygiene		J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Personal Security		J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S

Table 1. Health and Safety Risk Analysis Table

Associated Hazard Section / Project Activity	Site Walks	Site Surveying/Utility Locating	Radiation Surveys and Monitoring	Mobilization/ Demobilization	Drilling	Well Installation	Borehole Abandonment	Soil and Groundwater Sampling	Aquifer Testing	IDW Management
Shipping and Transportation of Hazardous Waste			J					J, S	J, S	J, S
Unknown or Suspect Objects/Material	J	J, S	J		J, S	J, S	J, S	J, S	J, S	J, S
Project-Specific Hazards – Refer to the Jacobs HS&E Field Handbook, Section 8, and the additional project-specific controls in this plan when specified.										
All-terrain vehicle / utility-terrain vehicle Safety		J, S								
Compressed Gas Cylinders									J, S	
Concrete Work (including well pad construction)						S				
COVID-19	J, S	J, S	J, S	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Crystalline Silica			J			S				
Drilling Safety					J, S	J, S	J, S			
Drum and Portable Tank Handling			J							J, S
Dust		S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Fall Protection					S	S				
Forklifts Operations					S	S	S		S	S
Groundwater Sampling/Water Level Measurements								J	J	

Table 1. Health and Safety Risk Analysis Table

Associated Hazard Section / Project Activity	Site Walks	Site Surveying/Utility Locating	Radiation Surveys and Monitoring	Mobilization/ Demobilization	Drilling	Well Installation	Borehole Abandonment	Soil and Groundwater Sampling	Aquifer Testing	IDW Management
Hand and Power Tools		S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Haul Trucks										J, S
Hoists					J, S	J, S	J, S			
Ionizing Radiation			J		J, S	J, S	J, S	J, S		J, S
Marijuana Cultivation Sites	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
NORM	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Off-Road Driving Safety	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Portable Generators					J, S	J, S	J, S		J, S	
Pressurized Lines/Equipment					J, S	J, S	J, S		J, S	
Pressure Washing Operations					J, S					
Rigging					J, S	J, S	J, S			
Slips, Trips and Falls	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Spotters during Vehicle Backing Operations and Heavy Equipment Tasks	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Stairways and Ladders				J, S	J, S	J, S	J, S			
Traffic Control	J	J, S	J	J, S						J, S
Utilities (overhead)		S	J	J, S	J, S	J, S	J, S			J, S

Table 1. Health and Safety Risk Analysis Table

Associated Hazard Section / Project Activity	Site Walks	Site Surveying/Utility Locating	Radiation Surveys and Monitoring	Mobilization/ Demobilization	Drilling	Well Installation	Borehole Abandonment	Soil and Groundwater Sampling	Aquifer Testing	IDW Management
Utilities (underground)				J, S	J, S	J, S	J, S			
Wastewater					J, S	J, S		J, S		J, S
Working Around Material Handling Equipment			J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Physical Hazards – Refer to Physical Hazards in the Jacobs HS&E Field Handbook, Section 9, and the additional project-specific controls in this plan when specified.										
Noise			J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Ultraviolet Light exposure (sunburn)	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Temperature Extremes	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Biological Hazards – Refer to Biological Hazards in the Jacobs HS&E Field Handbook, Section 10, and the additional project-specific controls in this plan when specified.										
Africanized Honey Bees	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Bees and Other Stinging Insects	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Cactus	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Coyotes	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Hantavirus	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Mosquitoes and Dengue, Chikungunya, Zika and West Nile Viruses	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Poison Ivy, Oak and Sumac	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S

Table 1. Health and Safety Risk Analysis Table

Associated Hazard Section / Project Activity	Site Walks	Site Surveying/Utility Locating	Radiation Surveys and Monitoring	Mobilization/ Demobilization	Drilling	Well Installation	Borehole Abandonment	Soil and Groundwater Sampling	Aquifer Testing	IDW Management
Protected Species and Habitat	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Scorpions	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Snakes	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Spiders – Brown Recluse and Black Widow	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S
Ticks	J	J, S	J	J, S	J, S	J, S	J, S	J, S	J, S	J, S

Note:

HazCom = hazard communication

NORM = Naturally Occurring Radioactive Material

6. Hazards and Controls

Safe work practices and hazard control measures to reduce or eliminate potential hazards as identified in Table 1 are stated in the Handbook, Sections 7-10, the associated SOP, and are addressed in project AHAs. Any additional project-specific control measures, or those hazards requiring additional emphasis, are identified in the following sections.

Always consult the appropriate SOP to ensure all requirements are implemented. All employees and subcontractors must remain aware of the hazards affecting them regardless of who is responsible for controlling the hazards. Jacobs employees and subcontractors who do not understand any of these provisions should contact the RHSM for clarification.

6.1 General Hazards and Controls

6.1.1 Driving Safety

All Jacobs employees are prohibited from using wireless devices while operating a motor vehicle when conducting company business regardless of the location or vehicle ownership and whether or not during regular working hours.

In all districts, be prepared for tourist activities in and around roadways. Abrupt stops by motorists, pedestrians and bicycle traffic are all heavy this time of year.

When leaving town areas, roads may be paved or unpaved. Be prepared for transitions from paved to unpaved roads (and vice versa) being aware of needs to change into or out of 4-wheel-drive. Be sure to consult maps of claim areas prior to mobilizing to field. Identify primary routes and alternate routes for leaving claim sites as certain roads can become impassable after weather events due to mud, standing water, or other hazards. Stay in a convoy configuration so as not to become separated as signage can be unreadable or not present. If alternate routes need to be traveled due to personnel towing trailer—be sure to review the meeting location and how to get there.

Maintain safe speeds on all roads keeping vigilant for wildlife, degraded road conditions, narrow roads and bridges and road hazards that could damage tires or undercarriage. Use spotters for tight areas, when backing up or traversing 4×4 sections of roads.

Some roads are shelf roads (along cliffs)—avoid these roads whenever possible. Be honest about driving comfort level—have someone else drive if not confident about your abilities on a certain road. Remember roads can become temporarily more hazardous to traverse after storms. If a storm is approaching and the access to the site was on roads that could become compromised after a storm event, anticipate changes to road conditions and leave the site before a storm arrives.

Assess areas for parking—don't pull off of the road unless it has been assessed for stability first. Consider what may happen after a storm event (i.e., whether vehicle could become stuck in mud; try to park on high ground outside of potential drainage ways).

6.1.2 Off-Road (4×4) Driving

- Hands-on mentoring by more experienced personnel shall be performed for less experienced personnel.
- Plan access routes to claim sites prior to setting out. Roads can become slick with mud and traverse along cliff sides with no protection. Do not attempt to drive routes you are not comfortable with. Have potential alternate routes to a claim site wherever possible so if a road becomes more dangerous than when you used it before, you can take another road.
- Know how the 4×4 system works and how to use the controls.
- Know where the spare tire and jack are located and how to use them.
- Know your vehicle's dimensions—height, width, length, approach angle, departure angle and ramp angle—so that you can pass through tight areas without damage.
- Know where the lowest point of clearance is—usually the differential casing.
- Get used to driving your 4×4. Get a feel for its size and driving characteristics.
- Practice using the low ratio gearbox.
- If the vehicle is equipped with manual locking hubs, try them out.
- Keep track of maintenance on filters, belts and hoses and keep all fluids topped up.
- Before going off-road, inspect the vehicle. Make sure your tires (including the spare) are in good condition and inflated properly. Look under the vehicle for any leaks or mechanical problems. Make sure all of your fluids are topped off. Check the condition of your steering and brakes.
- Pay attention to how the vehicle is loaded. Loads should be distributed evenly within the vehicle if possible. Loads behind the rear axle will sag the rear of the vehicle, limiting your departure angle and clearance. Excessive loads will change the center-of-gravity, thus making the vehicle less stable.
- Do not drive off-road. If a road is impassable, retreat. We are not authorized to drive on any land that is not a marked road (as shown on a topo map.)
- Be time-conscious. What may look like a short trip on the map may take many hours in 4-wheel drive—so allow enough time for safe travel.
- Drive within your ability. If you are not comfortable, do not proceed.
- Avoid surprises by surveying the road ahead before you drive it, when needed. Get a good idea where to place the tires and have a plan of approach. Follow through to beyond the obstacle.
- Driving diagonally = Rollover. Always drive straight down hills or steep terrain. Know your approach and departure angles, the bumper to tire distance. Some trails will require off-camber driving. In situations like this it’s best to go slow, keeping the tires in the tracks.

- Avoid driving over obstacles that may cause the vehicle to become stuck. Cross ditches or logs at an angle so that one wheel at a time goes over the obstacle; the other three help the one wheel to climb over. Dropping the tire into a ditch or crack in a rock can put you and your truck in a vulnerable position.

6.2 Physical Hazards and Controls

In conjunction with the Handbook provisions, special emphasis is placed on these hazards and controls described below because they are not fully addressed in the Handbook.

6.2.1 Drilling Safety

Below are the hazard controls and safe work practices to follow when working around or performing drilling. Ensure the requirements below are followed.

- When considering drilling at sites with nearby MWs, particularly in cases where drilling methods utilize pressurized fluids (air or water), consider the potential risk of hydraulic communication between the drilling location and the adjacent wells and/or other subsurface conduits.
- The drill rig is not to be operated in inclement weather.
- The driller is to verify that the rig is properly leveled and stabilized before raising the mast.
- Personnel should be cleared from the sides and rear of the rig before the mast is raised.
- The driller is not to drive the rig with the mast in the raised position.
- The driller must check for overhead power lines before raising the mast. Maintain a minimum distance of 10 feet (3 meters) between mast and overhead lines (less than 50 kilovolts [kV]) and an additional 0.4 inches for every 1 kV greater than 50 kV. Verify the voltage of nearby overhead power lines to determine the minimum distance.
- If the project site is suspected of munitions or explosives of concern contamination, requirements of the *Explosives Usage and Munitions Response (MR)* procedure shall be followed. Munitions or explosives of concern include material potentially presenting an explosive hazard (MPPEH), discarded military munitions, materials that present a potential explosive hazard, chemical warfare materials, munitions constituents, and contaminated soil or groundwater. “Downhole” avoidance support may be required to prevent accidental contact with MPPEH. Safety requirements will be based on the risk assessment identified within the MR (safety) Opportunity Risk Evaluation.
- All drilling sites must be evaluated for potential contamination by consulting with the client, reviewing historic data related to properties’ past owners and uses, prior investigation reports or through vendor services.
- If unexpected contamination is discovered during drilling operations, all activities must immediately stop and the SC or PM shall be immediately notified. Work shall not recommence until authorized by the PM.
- If contamination is suspected or confirmed at the drilling site, the following must be implemented:
  - The standard hazardous materials/hazardous waste clause is included in our contract with the client and in our subcontract agreements

  - The drilling subcontract work plans address appropriate disclosure of potential contamination, any required training (e.g., HAZWOPER) and the requirement to plan for unexpected contamination. The subcontractor work plan and submittals are reviewed for appropriate licenses, certifications, permits, training, sampling and analytical, waste characterization, and waste management, including accumulation, transport, and disposal.

- Personnel should stand clear before rig startup.
- The driller is to verify that the rig is in neutral when the operator is not at the controls.
- Become familiar with the hazards associated with the drilling method used (cable tool, air rotary, hollow-stem auger, etc.).
- Do not wear loose-fitting clothing, watches, etc., that could get caught in moving parts.
- Do not smoke or permit other spark-producing equipment around the drill rig.
- The drill rig must be equipped with a kill wire or switch, and all personnel are to be informed of its location.
- Be aware and stand clear of heavy objects that are hoisted overhead. Ensure any components subject to load bearing are rated and not shop-made.
- The driller is to verify that the rig is properly maintained in accordance with the drilling company's maintenance program.
- The driller is to verify that all machine guards are in place while the rig is in operation.
- The driller is responsible for housekeeping (maintaining a clean work area).
- The drill rig should be equipped with at least one fire extinguisher.
- If the drill rig comes into contact with electrical wires and becomes electrically energized, do not touch any part of the rig or any person in contact with the rig, and stay as far away as possible. Notify emergency personnel immediately.
- Use the drilling self-assessment checklist to evaluate drilling operations.

6.2.2 Explosives from Historic Mining

Field team members can find items that could have been left over from historic mine blasting operations. They consist of wiring, items that look like a blasting caps, dynamite, or other related items. Since there is a potential to find explosive relate materials in the field, we have incorporated the Jacobs "3Rs Safety Program" (recognize, retreat, report) into our plans and training. The program is detailed below.

In the event a potential explosive related discovery were to occur onsite by Jacobs personnel, all work would cease and the following 3R procedures shall be executed:

1. Immediately Stop Work (RECOGNIZE)

RECOGNIZE: Do not disturb or move the item more than has been performed to facilitate to the visual screening process, as explosives can become very unstable over time. They can detonate with movement or sometimes due to ground vibration or stray electromagnetic source.

Explosives can be present in all shapes, sizes and/or colors. It must also be recognized that exposure to weather and time can alter or remove these markings.

2. Secure area/location where the item is discovered (RETREAT)

RETREAT: Stop and secure any operating equipment to the extent possible. Mark the general area/location of the hazard with tape, colored cloth, or colored ribbon. If available, attach the marker to a branch, structure or other existing object so that it is about 3 feet (0.9 meter) off the ground and visible from all approaches. Place the marker no closer than the point where you first recognized the hazard and DO NOT drive stakes into the ground or otherwise disturb the surface. Leave by the same route you entered the area if possible. Clear site of all workers and secure from unauthorized entry.

Do not transmit any radio/cellular phone frequencies. Signals transmitted from items such as cell phones, short-wave radios, single side-band radios or other communications and navigation devices may detonate the item.

3. Immediately make notification to the RHSM and PM (REPORT)

REPORT: Once area has been evacuated, notification to the RHSM and PM shall be made immediately by inReach device or satellite phone. Jacobs will notify the client of the potential hazard so they can investigate.

The client will determine if the item is safe to move or must be reported to local officials.

- Secure the site such that unauthorized personnel cannot have access to the area where the potential item was encountered.
- Ensure that the Jacobs PM and RHSM are fully advised of site conditions and new site developments.
- Ensure that site operations do not resume until we receive approvals to so.

The PM would notify the client as soon as practical. The appropriate land management agency will be contacted to notified of the potential explosives' location. The land management agency shall take control of the situation and Jacobs will not re-enter the area until given the all clear.

6.2.3 Encountering Illegal Activity or Homeless People in the Field

- Always have a buddy.
- Keep in mind you may encounter illegal activity or homeless people in your work areas.
- If you encounter an illegal activity, immediately leave the area. Do not linger to use your phone, mark on maps, mark locations on global positioning system units, etc., when in the vicinity of illegal activities. Contact the authorities and mark maps once you are safely miles away.
- If you are confronted by a suspected criminal or homeless person, do not escalate the situation. Explain to them that you are not anyone of authority. If you are told to surrender something to a criminal, do so and leave the area. If you are asked for money by a homeless

person, use your best judgment, but it is best not to give them any so they don't continue to return. It is better for your safety and theirs.

6.2.4 Hand and Power Tools

- Tools shall be inspected prior to use; damaged tools will be tagged and removed from service.
- Hand tools will be used for their intended use and operated in accordance with manufacturer's instructions and design limitations.
- Maintain all hand and power tools in a safe condition.
- Use PPE (such as gloves, safety glasses, earplugs, and face shields) when exposed to a hazard from a tool.
- Do not carry or lower a power tool by its cord or hose.
- Portable power tools will be plugged into ground fault circuit interrupter (GFCI) protected outlets.
- Portable power tools will be Underwriters Laboratories listed and have a three-wire grounded plug or be double insulated.
- Disconnect tools from energy sources when they are not in use, before servicing and cleaning them, and when changing accessories (such as blades, bits, and cutters).
- Safety guards on tools must remain installed while the tool is in use and must be promptly replaced after repair or maintenance has been performed.
- Store tools properly in a place where they will not be damaged or come in contact with hazardous materials.
- If a cordless tool is connected to its recharge unit, both pieces of equipment must conform strictly with electrical standards and manufacturer's specifications.
- Tools used in an explosive environment must be rated for work in that environment (that is, intrinsically safe, spark-proof, etc.).
- Working with manual and pistol-grip hand tools may involve highly repetitive movement, extended elevation, constrained postures, and/or awkward positioning of body members (for example, hand, wrist, arm, shoulder, neck, etc.). Consider alternative tool designs, improved posture, the selection of appropriate materials, changing work organization, and sequencing to prevent muscular, skeletal, repetitive motion, and cumulative trauma stressors.

Machine Guarding

- Ensure that all machine guards are in place to prevent contact with drive lines, belts, chains, pinch points, or any other sources of mechanical injury.
- Unplugging jammed equipment will be performed only when equipment has been shut down, all sources of energy have been isolated, and equipment has been locked/tagged and tested.

- Maintenance and repair of equipment that results in the removal of guards or would otherwise put anyone at risk requires lockout of that equipment prior to work.

6.2.5 Personal Hygiene

- Good hygiene is essential for personal health and to reduce the potential of cross-contamination when working on a hazardous waste site. Implement the following:
  - Keep hands away from nose, mouth, and eyes during work.
  - Keep areas of broken skin (chapped, burned, etc.) covered.
  - Wash hands with soap and water prior to eating, smoking, or applying cosmetics.
  - Dispose of PPE properly.
  - Wash boots before leaving the site, or wear disposal boot covers.

6.2.6 Exposure to Public Vehicular Traffic

Take the following precautions when working around traffic and in or near an area where traffic controls have been established by a contractor:

- Exercise caution when exiting traveled way or parking along street; avoid sudden stops, use flashers, etc.
- Park in a manner that will allow for safe exit from vehicle, and where practicable, park vehicle so that it can serve as a barrier.
- All staff working adjacent to traveled way or within work area must wear reflective/high-visibility safety vests.
- Wear eye protection to protect from flying debris.
- Remain aware of factors that influence traffic-related hazards and required controls: sun glare, rain, wind, flash flooding, limited sight distance, hills, curves, guardrails, shoulder width (breakdown lane), etc.
- Remain aware of an escape route (behind an established barrier, parked vehicle, guardrail, etc.).
- Pay attention to moving traffic; never assume drivers are looking out for you.
- Work as far from traveled way as possible to avoid creating confusion for drivers.
- When workers must face away from traffic, use a buddy system, where one worker is looking toward traffic.
- When working on highway projects, obtain a copy of the contractor's traffic control plan.
- Protect work area with a physical barrier such as a K-rail or Jersey barrier.
- Review traffic control devices to ensure that they are adequate to protect the work area. Traffic control devices should convey a clear meaning, command respect of road users, and give adequate time for proper traffic response. The adequacy of these devices is dependent on limited sight distance, proximity to ramps or intersections, restrictive width, job duration, and traffic volume, speed, and proximity.

- Use lookouts when physical barriers are not available or practical. The lookout continually watches approaching traffic for signs of erratic driver behavior and warns workers. Vehicles should be parked at least 40 feet away from the work zone and traffic. Minimize the amount of time that you will have your back to oncoming traffic.

6.2.7 Utilities (Underground)

An assessment for underground utilities must be conducted where there is a potential to contact underground utilities or similar subsurface obstructions during intrusive activities. Intrusive activities include excavation, trenching, drilling, hand augering, soil sampling, or similar activities.

The assessment must be conducted before any intrusive subsurface activity and must include at least the following elements:

- A background and records assessment of known utilities or other subsurface obstructions.
- Contacting and using the designated local utility locating service.
- Conducting an independent field survey to identify, locate, and mark potential underground utilities or subsurface obstructions. *Note: This is independent of, and in addition to, any utility survey conducted by the designated local utility locating service above.*
- A visual survey of the area to validate the chosen location.
- When required by the project-specific safety plan, using the Utility Verification Checklist.

When any of these steps identifies an underground utility within 5 feet (1.5 meters) of intrusive work, then non-aggressive means must be used to physically locate the utility before a drill rig, backhoe, excavator, or other aggressive method is used.

Aggressive methods are never allowed within 2 feet of an identified high-risk utility (see paragraph below).

Any deviation from these requirements must be approved by the Responsible HS Manager and the PM.

6.2.7.1 Background and Records Assessment of Known Utilities

Identify any client- or location-specific permit and/or procedural requirements (e.g., dig permit or intrusive work permit) for subsurface activities. For military installations, contact the Base Civil Engineer and obtain the appropriate form to begin the clearance process.

Obtain available utility diagrams and/or as-built drawings for the facility.

Review locations of possible subsurface utilities including sanitary and storm sewers, electrical lines, water supply lines, natural gas lines, fuel tanks and lines, communication lines, lighting protection systems, etc. Note: Use caution in relying on as-built drawings as they are rarely 100 percent accurate.

Request that a facility contact with knowledge of utility locations review and approve proposed locations of intrusive work.

6.2.7.2 Designated Local Utility Locating Service

Contact your designated local utility locating service (e.g., Dig-Safe, Blue Stake, One Call) to identify and mark the location of utilities. In the United States, call 811 in the go to www.call811.com to identify the appropriate local service group. Contacting the local utility locating service is a legal requirement in most jurisdictions. (Some U.S. states, such as Washington, require that the entity performing the intrusive work be the responsible for contacting the local service.) Where subcontractors are responsible for the intrusive work, personnel shall verify the subcontractor has contacted the designated local utility locating service.

6.2.7.3 Independent Field Survey (Utility Locate)

The organization conducting the intrusive work (Jacobs or subcontractor) shall arrange for an independent field survey to identify, locate, and mark any potential subsurface utilities in the work area. This survey is in addition to any utility survey conducted by the designated local utility locating service.

The independent field survey provider shall determine the most appropriate instrumentation/technique or combinations of instrumentation/techniques to identify subsurface utilities based on their experience and expertise, types of utilities anticipated to be present, and specific site conditions.

A Jacobs or subcontractor representative must be present during the independent field survey to observe the utility locate and verify that the work area and utilities have been properly identified and marked. If there is any question that the survey was not performed adequately or the individual was not qualified, then arrangements must be made to obtain a qualified utility locate service to resurvey the area. Obtain documentation of the survey and clearances in writing and signed by the party conducting the clearance. Maintain all documentation in the project file.

If the site owner (military installation or client) can provide the independent field survey, Jacobs or the subcontractor shall ensure that the survey includes:

- Physically walking the area to verify the work location and identify, locate, and mark underground utility locations:
- Having qualified staff available and instrumentation to conduct the locate.
- Agreeing to document the survey and clearances in writing.
- Should any of the above criteria not be met, Jacobs or subcontractor must arrange for an alternate independent utility locate service to perform the survey.
- The markings from utility surveys must be protected and preserved until the markings are no longer required. If the utility location markings are destroyed or removed before intrusive work commences or is completed, the PM, SC, or designee must notify the independent utility locate service or the designated local utility locating service to resurvey and remark the area.

6.2.7.4 Visual Assessment before and during Intrusive Activities

Perform a "360 degree" assessment. Walk the area and inspect for utility-related items such as valve caps, previous linear cuts, patchwork in pavement, hydrants, manholes, utility vaults, drains, and vent risers in and around the dig area.

The visual survey shall include all surface landmarks, including manholes, previous liner cuts, patchwork in pavement, pad-mounted transformers, utility poles with risers, storm sewer drains, utility vaults, and fire hydrants.

If any unanticipated items are found, conduct further research before initiating intrusive activities and implement any actions needed to avoid striking the utility or obstruction.

6.2.7.5 Completion of the Utility Verification Checklist

When required by the safety plan, the utility verification checklist shall be completed by the SC and submitted to the PM and HSM for review and signature. Follow the instructions on the form and keep it accessible in the field during intrusive operations. Evaluate intrusive activities for changed conditions and contact the PM and HSM to ensure hazards are addressed and whether a new checklist needs to be completed.

6.2.7.6 Subsurface Activities within 5 feet of an Underground Utility or if there is Uncertainty

When aggressive intrusive activities will be conducted within 5 feet (1.5 meters) of an underground utility or when there is uncertainty about utility locations, locations must be physically verified by non-aggressive means such as air or water knifing, hand digging, or human powered hand augering. Non-conductive tools must be used if electrical hazards may be present. If intrusive activities are within 5 feet (1.5 meters) and parallel to a marked existing utility, the utility location must be exposed and verified by non-aggressive methods every 100 feet (30.5 meters). Check to see if the utility can be isolated during intrusive work.

6.2.7.7 Intrusive Activities within 2 feet of an Underground Utility

Use non-aggressive methods (hand digging, vacuum excavation, etc.) to perform intrusive activities within 2 feet of a high-risk utility (i.e., a utility that cannot be de-energized or would cause significant impacts to repair/replace). Hazardous utilities shall be de-energized whenever possible.

6.2.7.8 Spotter

A spotter shall be used to monitor for signs of utilities during advancement of intrusive work (e.g., sudden change in advancement of auger or split spoon, presence of pea gravel or sand in soils, presence of concrete or other debris in soils, refusal of auger or excavating equipment). If any suspicious conditions are encountered stop work immediately and contact the PM or RHSM to evaluate the situation. The spotter must have a method to alert an operator to stop the intrusive activity (e.g., air horn, hand signals).

6.2.8 Utilities (Overhead)

6.2.8.1 Proximity to Power Lines

No work is to be conducted within 50 feet (15.2 meters) of overhead power lines without first contacting the utility company to determine the voltage of the system. No aspect of any piece of equipment is to be operated within 50 feet (15.2 meters) of overhead power lines without first making this determination.

Operations adjacent to overhead power lines are PROHIBITED unless one of the following conditions is satisfied:

- Power has been shut off, positive means (such as lockout) have been taken to prevent the lines from being energized, lines have been tested to confirm the outage, and the utility company has provided a signed certification of the outage.
- The minimum clearance from energized overhead lines is as shown in the table below, or the equipment will be repositioned and blocked to ensure that no part, including cables, can come within the minimum clearances shown in the table below.

Minimum Distances from Power Lines

Power Lines Nominal System (kV)	Minimum Required Distance Feet (meters)
0-50	10
51-200	15
201-350	20
351-500	25
501-750	35
751-1000	45
Over 1000	Established by utility owner/operator or by a professional engineer in electrical power transmission/distribution.

(*These distances have been determined to eliminate the potential for arcing based on the line voltage.*)

The power line(s) has been isolated through the use of insulating blankets which have been properly placed by the utility. If insulating blankets are used, the utility will determine the minimum safe operating distance; get this determination in writing with the utility representative's signature.

All inquiries regarding electric utilities must be made in writing and a written confirmation of the outage/isolation must be received by the PM prior to the start of work.

6.2.9 Slips, Trips, and Falls

6.2.9.1 General

- Institute and maintain good housekeeping practices.

- Designate foot traffic paths in and out of sites, when necessary, to ensure paths are kept free from slip, trip, and fall hazards or to deter personnel from taking shortcuts where slip, trip, hazards may occur.
- Mitigate icy conditions by keeping foot traffic paths clear of ice and snow.
- Watch footing while walking to avoid trip hazards, animal holes, or other obstacles, especially in tall grassy areas.

6.2.9.2 Muddy Conditions

- Muddy conditions present a slipping hazard. Use mats or other similar surface if footing cannot be stabilized.
- Take shortened steps across muddy areas.
- Use a walking staff or other similar means to assist with balance.

6.2.9.3 Steep Slopes/Uneven Ground/Rock and Vertical Slopes

- Be aware that escarpments can slough. Avoid these areas.
- Exercise caution in relying on rocks and trees/tree stumps for support; many times, they are loose.
- Whenever possible, switchback way up/down steep areas, and maintain a slow pace with firm footing.
- Employees walking in ditches, swales, and other drainage structures adjacent to roads or across undeveloped land must use caution to prevent slips and falls that can result in twisted or sprained ankles, knees, and backs.
- Whenever possible, observe the conditions from a flat surface; do not enter steep ditches or sides of a steep roadbed.
- If steep terrain must be negotiated, coordinate with the RHSM to evaluate the need for ladders/ropes to provide stability.

6.2.10 Radiation Hazards

External radiological dose to workers from NORM is the primary radiological hazard. NORM has always been present in the earth's crust and life on earth has always been exposed to it. NORM is a major contributor to one's background ionizing radiation exposure. Although the concentration of NORM in most natural substances is low, elevated concentrations of NORM can be encountered in the SMCB. NORM of concern in this area can include uranium and thorium and their associated decay products, such as radium and radon.

Examples of uranium-containing minerals: Note the slight yellow discoloration in portions of these samples which is indicative of uranium oxide (likely U_3O_8)

6.2.10.1 Ionizing Radiation

Ionizing radiation consists of energy in the form of particles or electromagnetic rays emitted from a source. It is referred to as ionizing because this type of radiation has the ability, when it contacts matter, to cause ionization (the displacement of electrons from within atoms of the contacted matter). Sources of ionizing radiation may be machines that produce radiation, such as x-ray machines, or unstable atoms that, because of their instability, emit radiation. Unstable means the atom's nucleus has more energy than it can hold (because it contains excess neutrons) and emits radiation from the nucleus until the excess energy is gone. Materials containing unstable atoms which emit radiation are referred to as radioactive, and the process that results in the emission of nuclear radiation is referred to as radioactive decay (sometimes radioactive disintegration). The four primary types of ionizing radiation that we are generally concerned with are alpha and beta particles, and x-ray and gamma ray radiation.

1.1.1.1.1 Alpha Particles

Alpha particles are released from the nucleus of radioactive atoms during the process of radioactive decay. Materials that emit alpha particles are called alpha emitters, though they may emit other types of radiation as well. Alpha particles generally have a high level of energy and consist of two protons and two neutrons with a positive charge of 2. Because they are relatively heavy (in nuclear terms) alpha particles can only travel a few inches through air and can be stopped by clothing, the outside layer of skin, a sheet of paper or other paper-thin material. As a result, alpha emitters are not a health hazard so long as they are not inhaled, ingested or otherwise taken into the body. If alpha-emitting radioactive materials are taken into the body, they will deliver all their energy directly to a small volume of the tissue where they deposit. For example, some alpha emitters are "bone seekers" because of their chemical characteristics and may become part of the bone structure where they will deposit all their energy. Others may concentrate in body organs such as the kidneys, liver, lungs and spleen. The primary objective in

dealing with alpha emitters is contamination control, and prevention of inhalation and ingestion since they are considered internal hazards.

1.1.1.1.2 Beta Particles

Beta particles are tiny charged particles like electrons emitted from the nucleus of radioactive atoms and have an electric charge of negative 1. Beta particles can travel up to several feet through air, but can still be stopped by clothing, several layers of skin, a sheet of plastic, or thin metal. Although they can penetrate the surface layers of human skin, they do not have the energy required to penetrate and expose the internal organs. Surface skin burns, similar to a sunburn, can result from high exposure to beta radiation. If beta emitters are taken into the body they will deliver their energy throughout the tissues and organs where they deposit. The primary objectives in dealing with beta emitters are contamination control, avoiding exposure to uncovered skin areas and the eyes, and prevention of inhalation and ingestion. An additional issue associated with beta emitters in relatively large quantities is the secondary x-ray radiation that can be generated when the beta particles interact with high atomic mass materials (e.g., lead and steel). As a result, plastics and aluminum are preferred shielding for beta emitters.

1.1.1.1.3 Gamma Rays

Gamma rays are electromagnetic radiation like sunlight (although with a much higher frequency and energy). Unlike alpha and beta radiation, gamma rays are not particles and have no mass, but are emitted from the nucleus of many radioactive materials during radioactive decay. Because gamma rays have no mass, but can have relatively high energy, they travel long distances, are very penetrating and difficult to stop. Gamma rays from a source external to the body are still able to expose the whole body including internal organs. The primary objective in dealing with gamma emitters is shielding to prevent external exposure. In the event of inhalation or ingestion of gamma emitters, the whole body will be exposed, and much of the gamma ray's energy will be deposited outside the body.

1.1.1.1.4 X-Rays

X-rays are electromagnetic radiation (similar to gamma rays) produced when high-speed electrons are slowed down rapidly upon striking a high atomic mass substance. They are produced in x-ray generating machines by directing a beam of electrons at a target material, and as mentioned above, they can also be generated when beta particles (negatively charged particles like electrons) interact with high atomic mass materials. X-rays can be produced with a wide range of energies based on the energy of the electron beam and nature of the target material. As with gamma rays, the primary objective in dealing with X-rays is shielding to prevent external exposure. However, X-rays are not a nuclear radiation (i.e., emitted from the nucleus of a radioactive material), and as such there are no concerns with inhalation or ingestion.

6.2.10.2 Training

Site workers shall receive basic radiological awareness training commensurate with the risk by qualified Jacobs personnel prior to beginning field work. This will include:

1. Identification of radiation hazards associated with this project.
2. Radiation basics.

3. Emergency procedures to be followed.
4. Procedures for reporting an actual or suspected exposure.
5. The purpose of survey and personnel monitoring equipment.
6. The applicable regulations and those incorporated by reference.

Additional training will be required for site workers, including radiation protection personnel, if action levels as described in the following section are exceeded. Technicians monitoring site conditions will be trained and/or qualified commensurate with the potential risk as required by the Radiation Safety Specialist or designee as required by (e.g., American National Standards Institute [ANSI] 3.1 qualified lead technician supported by additional trained individuals).

6.2.10.3 General Control Measures

Always follow the As Low As Reasonably Achievable (ALARA) principle which is the approach to radiation protection to manage and control exposures (both individual and collective) to the work force and to the public to as low as is reasonable, considering social, technical, economic, practical, and public policy considerations. As used in this part, ALARA is not a dose limit but a process that has the objective of attaining doses as far below the applicable limits of this part as is reasonably achievable. The applicable ALARA safety controls to be implemented are as follows:

1. Time: do not loiter in areas with suspected material to reduce the duration of potential exposure,
2. Distance: do not approach a suspect item any closer than needed to perform the hand augering, direct push drilling, surface and subsurface soil sampling project work scope to reduce the amount of potential radiological energy exposure,
3. Shielding: use PPE as outlined in **Section 10**.

Refer to Jacobs documents Corporate Health and Safety Program; Program and Training Manual; and Corporate Health and Safety Program, Radiation Protection Program Manual for standards of practice in contaminated areas and ALARA practices. These materials are on the Virtual Office under Operations/Health, Safety, & Environment/Manuals (under the Policy, Procedures, Manuals tab).

In addition to practicing ALARA, best practices for reducing radiological doses include:

- Avoid generating dust. Dust control will be performed by Jacobs subcontractor personnel. Stay a safe distance away from any intrusive activities. If wind causes potentially impacted soils to become airborne and engineering controls, i.e., water misting or standing in upwind area, are not effective, suspend work and move upwind until no dust is being produced, this may include suspending work altogether.
- Do not enter restricted work areas unless training, monitoring equipment, and PPE requirements have been met.
- Limit the amount of potential waste (e.g., packaging, soil, decon water, boxes, paperwork, etc.).

- Do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics.
- Promptly report any condition which may lead to or cause a violation of radiation protection standards.

Stay a safe distance away from any intrusive activities that personnel may be performing (e.g., shoveling or other similar activities). If wind causes potentially impacted soils to become airborne, suspend work and move upwind until no dust is being produced, this may include suspending work altogether.

- Assure radioactive sources, containers, and the area are properly labeled and posted.
- Know the emergency evacuation warning signals and be prepared to respond.
- Plan activities to minimize exposure (ALARA) and waste generation.
- Avoid unnecessarily touching waste rock, ore, or other potentially contaminated material and not without nitrile gloves.
- Limit time within higher dose rate areas (e.g., adjacent to waste rock piles) to fill out paperwork or have discussions.
- Set up base of operations in low dose rate areas.
- Be cognizant of potential intake hazards and control potential contamination. For example, do not set down equipment or supplies within the drainage channel or on a rock pile.
- Before crossing over the boundaries of the former mine site and after performing tasks that may result in contamination, perform a frisking survey using the Ludlum meter after wet wipe decontamination. This would include surveying equipment and personnel coming into contact with soil samples. Note the meter's baseline counts per minute (cpm) which measures alpha, beta, and gamma radiation. Use the meter to measure the cpm of staff's hands, boots, mouths, and tires of trucks in accordance with the Jacobs NORM Contamination ("Frisking") Surveys procedure. If readings above the baseline measurements are detected (rather than the 2 times baseline threshold or action level), follow procedures for radiological decontamination (remove dirt/debris with wet wipe and or manual methods) and re-frisk to confirm the measures were effective. If contamination above these levels are found notify the PM, RSO, and HSM. Additional discussions regarding action levels are included in Section 6.2.10.4.
- To better understand and compare occupational doses versus doses received through everyday life, consult the following links.
  - Radiation Health Effects
  - Sources of Radiation around Us
  - Doses in Everyday Life
  - Measuring Radiation
- All radiation protection and control practices will be performed in accordance with the Radiation Related Field Operations AHA.

6.2.10.4 Dose and Contamination Limits, Monitoring, Action Levels, and Responses

The U.S. Nuclear Regulatory Commission has established standards that allow safe exposures to 5,000 milliroentgen equivalent man per year (mrem/yr) for those who work with and around radioactive material, and 100 mrem/year for members of the public (in addition to the radiation we receive from natural background sources). Dose rate levels less than 25 microroentgen equivalent man per hour (µrem/hr) and total gross cpm beta/gamma radioactivity less than twice background are expected, which will keep dose to personnel well below public limits and ALARA.

To keep doses ALARA, the action levels for this project will be twice the established background levels for dose and Regulatory Guide 1.86 for contamination levels. Personal dose monitoring will not be required, but routine surveys will establish and maintain area radiation safety. In the event action levels are exceeded, field staff will safely pause work, move away from the location, and notify the PM, RSO or designee, and HSM. The RSO or designee will provide the appropriate course of action, which may include collecting additional measurements. Locations with confirmed radiological anomalies will be avoided and areas will be posted with appropriate signage as needed.

Due to the potential for elevated ambient radiation levels, the RSO or designee will provide concurrence for establishing background dose rates. If it is determined that personnel must enter areas with elevated dose rates in order to perform essential activities, then the total time spent by those individuals in those areas shall be tracked along with the maximum dose rate encountered and an estimate of the typical readings encountered during the entry. the entry times and dose rate information will be used by the RSO (or designee) to determine whether it is likely that the individual will continue to have a total dose of less than 100 mrem for the year. If the RSO determines that this is no longer the case, the RSO will designate whether measures such as additional training consistent with Radiation Workers is appropriate, and whether additional dosimetry (such as bioassays) may be appropriate. Note that the time allowances area associated with expectations of keeping total doses less than levels generally associated with allowances for members of the general public. These dose levels are being used as ALARA thresholds and are significantly less than the annual dose of 5000 mrem in a year allowed under OSHA for trained radiation workers. Also, note that although time allowances for entries into higher dose rate areas have been prescribed, these time allowances are not to be viewed as blanket permission for entering such areas. It is still necessary under the ALARA principle to have a justifiable reason for the additional dose that would be received in doing so (e.g., to collect data necessary to support site analyses).

Areas exhibiting readings above 5,000 µrem/hr (5 mrem/hr) require posting as Radiation Areas under 29 CFR 1910.1096(d)(3)(ii). An action level above 2,000 µrem/hr has been selected as a cut-off dose rate above which additional training and planning is warranted to maintain doses ALARA.

1.1.1.1.5 Radon

With respect to the potential for personnel contamination when frisking, if the action level is exceeded, safely pause and notify the onsite radiation technician. Avoid contact with others

(i.e., stand a safe distance away to prevent potential cross-contamination until resolved). Radon progeny contamination while not a concern from the standpoint of removable contamination limits, can give false indications of actual regulated contamination. For this reason, the onsite radiation technician will evaluate and address the reading that exceeds twice background while frisking.

6.2.10.5 Radiological Monitoring Equipment

During all intrusive work, radiation survey equipment as listed in **Table 2** will be used. All survey work will be documented in logs and/or forms provided by the Radiation Technician. Action levels and responses are also included. Qualified personnel will perform initial setup of equipment and initial, in-process, and as left surveys to monitor general radiological conditions for personnel, and equipment during site work to include drill cuttings and drilling and sampling equipment. If elevated activity above action levels are encountered, work will be safely paused, and notifications as described in **Section 6.2.10.4** should be made.

Table 2. Radiological Monitoring Equipment

Instrument	Tasks	Practical Action Levels (AL)	Action to be Taken when Practical Action Level reached	Frequency	Calibration Check
Radiation Meter: Bicron MicroREM or equivalent	Before, during and after intrusive work: Field checks of general area dose rates, soil and equipment	Unusual or unexpected dose rates of any kind should be monitored more closely with the AL 2× Background (e.g. 2 (µrem/hr) =16 µrem/hr	Safely pause work Notify PM, RSO or designee, HSM, and move away from location. Investigate cause of reading as directed. Avoid confirmed anomalies. Post area (if required).	Initially, periodically, and at the end of the task (see field instruction for details).	Initial and Daily
Radioactivity Contamination Meter: Ludlum Model 2360 with a Ludlum Model 43-93 or equivalent;	Equipment and any AL exceedance while frisking	Unusual or unexpected gross cpm values of any kind should be monitored more closely with the AL 2× Established local Background (e.g., 2 (60 cpm) = 120 cpm)	Safely pause work Notify PM, RSO or designee, HSM and move away from location. Investigate cause of reading as directed. Avoid confirmed anomalies. Post area (if required).	Initially, periodically, and at the end of the task (see field instruction for details).	Initial and Daily

Instrument	Tasks	Practical Action Levels (AL)	Action to be Taken when Practical Action Level reached	Frequency	Calibration Check
Frisker: Ludlum Model 12 with a Ludlum Model 44-9 or equivalent	Personnel hands and boots and equipment	Unusual or unexpected gross cpm values of any kind should be monitored more closely with the AL 2× Established local Background (e.g., 2 (60 cpm) = 120 cpm)	Safely pause work Notify PM, RSO or designee, HSM and move away from location. Investigate cause of reading as directed. Avoid confirmed anomalies. Post (if required).	Periodically during intrusive work, prior to breaks, and end of shift.	Initial and Daily

6.3 Biological Hazards

**For biological hazards not listed here, refer to the Handbook for controls.

6.3.1 Infectious Pathogens

Exposure to pathogens may occur when rendering first aid or cardiopulmonary resuscitation (CPR), when coming into contact with landfill waste, or when working near sanitary waste streams containing potentially infectious material. Exposure control includes using basic Haz Waste characterization PPE (e.g., nitrile gloves, safety glasses, covering exposed skin, etc.) (see Section 10 for PPE guidelines during site activities). If you encounter what appears to be medical waste and/or drug paraphernalia, DO NOT TOUCH. Contact the HSM for further guidance. Prudent vaccinations will be offered before an employee participates in a task in which an exposure is possible. At a minimum though, all employees shall use good personal hygiene (wash hands regularly with warm, soapy water, especially before and after eating, smoking, and using the restroom) and report any inadvertent contact or needle sticks immediately.

6.3.2 Coyotes

While far from domesticated, coyotes show little fear of humans and have become comfortable living in proximity to communities. Although they tend to do most of their hunting after dusk, coyotes can be active at any time. Under normal circumstances, a coyote is not a danger to humans. They are, however, territorial and will respond aggressively if they or their family are threatened.

If you encounter a coyote that behaves aggressively, you have probably gotten too close to its prey or its family. Try to scare the coyote by yelling and waving your arms. Throw rocks, sticks, or other objects. Do not turn away and run.

6.3.3 Infectious Disease/Coronavirus

Coronavirus disease 2019 (COVID-19) is a respiratory illness that can spread rapidly from person to person. Field personnel can potentially be exposed to COVID-19 while mobilizing or demobilizing to and from the project site, while working in areas with ongoing spread of the virus, and while working in close proximity to other field staff that have been previously exposed to the virus.

COVID-19 is thought to spread mainly between people who are in close contact with one another (within about 6 feet) through respiratory droplets produced when an infected person talks, coughs, or sneezes. It also may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes. Symptoms can include, but are not limited to fever, cough, shortness of breath or difficulty breathing, chills, repeated shaking with chills, muscle pain, headache, sore throat, and new loss of taste or smell. The following control measures should be implemented to reduce the risk of contracting, and further spreading of, COVID-19:

- Review and follow Jacobs Global Security Companywide Travel Restriction, Preparedness Pamphlet and Frequently Asked Questions and attached Pandemic Management Strategy and Precautions for COVID-19 Precautions on Field Project Sites.
- Review signs and symptoms of Coronavirus with all field staff. Use Centers for Disease Control (CDC) guidance document to review COVID-19 awareness information.
- If project team member has specific COVID-19 concerns (e.g., in high risk category, high risk locations), speak with PM and supervisor. Accommodations shall be made by the PM and supervisor.
- If showing signs of COVID-19 (fever, cough, shortness of breath) in CDC guidance (attached); do not report to project site for work. Contact project Safety Liaison, WorkCare, supervisor, PM, HSM and Human Resources.
- Contact personal care physician. WorkCare can be contacted at this link; however, they will not diagnose you, but will refer you to your personal physician.

Additional COVID-19 field project control measures:

- Jacobs is requiring that all individuals performing work will wear cloth face coverings when they cannot maintain 6 feet of social distance in public areas or work centers.
- On project sites, where possible, undertake site work such as inspections during quieter times (early Mornings, scheduled breaks, and lunch) to reduce interaction with other employees and maintain social distancing of at least 6 feet or more from all persons at all times.
- Where close contact or contact with individuals is unavoidable but critical, the tasks must be risk assessed with the support of an HS&E professional (and if necessary, industrial hygienist or medical professional). The principles of prevention must be applied, and if necessary, as a last resort, PPE must be provided such as disposable coveralls, safety glasses, face-masks, nitrile gloves, and any other protective clothing deemed necessary. However, where work presents a risk that cannot be mitigated, the work shall not continue. If there is a need to

provide the disposable coveralls and nitrile gloves, ensure an appropriate disposal receptacle is provided. Garbage must be double bagged.

- Work in the smallest groups possible (e.g., alone where it makes sense for low-risk activities while staying in communication). Consider keeping similar teams together on shift or in working groups. This will limit the chance of cross-infection across multiple groups and limiting contact across groups can help reduce risk of large percentage of staff needing to be quarantined.
- Monitor local public health agencies communications. Follow all local agency guidance and restrictions.
- Ensure Field Team Lead and Safety Liaison has cell phone number of all field staff for communication to project teams.
- Refrain from person to person contact (e.g., handshakes, high-fives, etc.). Refrain from sharing personal items such as pens, glasses/mugs, cellphone, etc.
- Identify project-specific telework opportunities where feasible (e.g., work from hotel room).
- Frequent hand washing is required. Hand wash facilities are typically required at temporary job locations (e.g., at port-a-potty at field office). If a handwashing sink is not feasible (e.g., mobile staff), use disinfectant hand wipes.
- Provide hand sanitizer at all field project locations.
- Use disinfectant to frequently clean shared surfaces, including, but not limited to, rental cars, hotel room touch points, temporary office trailer touch points (e.g., door handles, workstations).
- If entering residential project site locations – ask occupants if they have signs of illness prior to entry. Do not enter residential locations with occupants that have signs/symptoms.

Note: All references are frequently updated. Check Jacobs and CDC COVID-19 webpages frequently for updates. The COVID-19 Management Plan for External Release is provided in Attachment 4.

6.3.4 Mosquito Bites

Due to the recent detection of the West Nile Virus in the southwestern United States, it is recommended that **preventative measures** be taken to reduce the probability of being bitten by mosquitoes whenever possible. Mosquitoes are believed to be the primary source for exposure to the West Nile Virus as well as several other types of encephalitis. Use the following guidelines to reduce the risk when working in areas where mosquitoes are prevalent:

- Stay indoors at dawn, dusk, and in the early evening.
- When outdoors, wear long-sleeved shirts and long pants.
- Because mosquitoes may bite through thin clothing, spray clothing with repellents containing permethrin or N,N-diethyl-meta-toluamide (DEET).

- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35 percent DEET. Repellents may irritate the eyes and mouth, so avoid applying repellent to the hands.
- When using an insecticide or insect repellent, read and follow the manufacturer's directions for use, as printed on the product. Note that Vitamin B and "ultrasonic" devices are NOT effective in preventing mosquito bites.

6.3.4.1 Symptoms of Exposure to the West Nile Virus

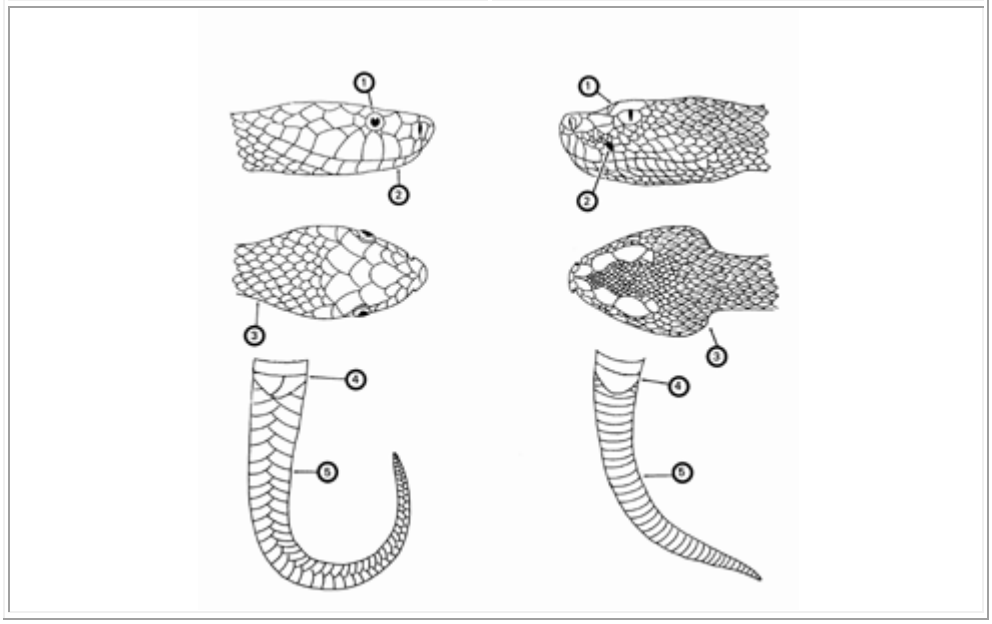
Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infections may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death. The West Nile Virus incubation period is from 3 to 15 days. Contact the project RHSM with questions, and immediately report any suspicious symptoms to your supervisor/PM and contact the occupational injury nurse at 1-888-449-7787.

6.3.5 Snakes

Snakes are typically found in underbrush and tall grassy areas. If you encounter a snake, stay calm and look around; there may be other snakes. Turn around and walk away on the same path you used to approach the area. If bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. Immediately call the occupational injury nurse at 1-888-449-7787. **DO NOT** apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake; note color, size, patterns, and markings. Below is a guide to identifying poisonous snakes from non-poisonous snakes.

Identification of Poisonous Snakes

Major Identification Features Non-venomous Snake	Major Identification Features Venomous Snake
1. Round pupils 2. No sensing pit 3. Head slightly wider than neck 4. Divided anal plate 5. Double row of scales on underside of tail	1. Elliptical pupils 2. Sensing pit between eye and nostril 3. Head much wider than neck 4. Single anal plate 5. Single scales on underside of tail



6.3.6 Spiders — Brown Recluse and Widow

The brown recluse spider is found most anywhere in the United States. It varies in size in shape, but the distinguishing mark is the violin shape on its body. Brown recluse spiders are typically non-aggressive. Watch for irregular, pattern-less webs that sometimes appear almost tubular built in a protected area such as in a crevice or between two rocks. The spider will retreat to this area of the web when threatened.

Black widow, red widow, and brown widow spiders are all poisonous. Most have globose, shiny abdomens that are predominantly black with red markings (although some may be pale and/or have lateral stripes), with moderately long, slender legs. These spiders are nocturnal and build three-dimensional tangled webs, often with a conical tent of dense silk in a corner where the spider hides during the day.

6.3.6.1 Hazard Controls

- Inspect or shake out any clothing, shoes, towels, or equipment before use.
- Wear protective clothing such as a long-sleeved shirt and long pants, hat, gloves, and boots when handling stacked or undisturbed piles of materials.

- Minimize empty spaces between stacked materials.
- Remove and reduce debris and rubble from around outdoor work areas.
- Trim or eliminate tall grasses from around outdoor work areas.
- Store apparel and outdoor equipment in tightly closed plastic bags.
- Keep tetanus boosters up to date (every 10 years). Spider bites can become infected with tetanus spores.
- If you think you have been bitten by a poisonous spider, immediately call the occupational injury nurse at 1-888-449-7787 and follow the guidance below:
  - Remain calm. Too much excitement or movement will increase the flow of venom into the blood.
  - Apply a cool, wet cloth to the bite or cover the bite with a cloth and apply an ice bag to the bite.
  - Elevate the bitten area, if possible.
  - Do not apply a tourniquet. Do not try to remove venom.
  - Try to positively identify the spider to confirm its type. If the spider has been killed, collect it in a plastic bag or jar for identification purposes. Do not try to capture a live spider, especially if you think it is poisonous.

Widow | Red Widow | Brown Widow | Brown Recluse




6.3.7 Ticks

Every year employees are exposed to tick bites at work and at home, putting them at risk of illness. Ticks are typically in wooded areas, bushes, tall grass, and brush. Ticks are black, black and red, or brown and can be up to one-quarter inch (6.4 millimeter) in size. Additional information is included in Attachment 5.

In some geographic areas, exposure is not easily avoided. Wear tightly woven light-colored clothing with long sleeves and pant legs tucked into boots; spray **only the outside** of clothing with permethrin or permanone and spray skin with only DEET. Check yourself frequently for ticks.

Where site conditions warrant (vegetation above knee height, tick endemic area) or when tasks warrant (e.g., having to sit/kneel in vegetation) that diminish the effectiveness of the other

controls mentioned above, bug-out suits (check with your local/regional warehouse)/Tyvek shall be used. Bug-out suits are more breathable than Tyvek.

Before starting field work, take precautions to avoid exposure by including pre-planning measures for biological hazards. Avoid habitats where possible, reduce the abundance through habitat disruption or application of acracide. If these controls are not feasible, contact your local/regional warehouse for preventative equipment such as repellants, protective clothing, and tick removal kits. Use the buddy system and perform tick inspections before entering the field vehicle. If ticks were not planned to be encountered and are observed, do not continue field work until these controls can be implemented. If bitten by a tick, follow the removal procedures found in the tick fact sheet and call the occupational injury nurse at 1-888-449-7787. Complete an Incident Report (either use the INTELEX system on the JacobsConnect) if you come into contact with a tick. For more detailed information, go to HS&E website or contact the RHSM.

Be aware of the symptoms of Lyme disease and Rocky Mountain spotted fever:

For both Lyme disease and Rocky Mountain spotted fever, chills, fever, headache, fatigue, stiff neck, and bone pain may develop. If symptoms appear, contact the occupational injury nurse at 1-888-449-7787.

7. Hazard Communication/Global Harmonized System

As indicated in Section 7 of the Handbook, under "Hazard Communication," the HazCom coordinator (the SC or qualified designee) must perform the following (additional HazCom duties are outlined in the Handbook):

- Complete an inventory of chemicals brought on site by Jacobs using the chemical inventory form included as Attachment 2.
- Confirm that an inventory of chemicals brought on site by subcontractors is available.
- Request or confirm locations of Globally Harmonized System (GHS) compliant (i.e., consisting of 16 sections that appear in the same order and contain uniform information regarding the chemical) safety data sheets (SDSs) from the client, contractors, and subcontractors for chemicals to which Jacobs employees potentially are exposed (Attachment 6).
- For chemicals used by Jacobs workers, before or as the chemicals arrive onsite, obtain an SDS for each hazardous chemical and include on the chemical inventory sheet (Attachment 2) and add the SDS to the SDS attachment section of this HSP (or maintain in an accessible binder onsite). Ensure everyone knows where SDSs are kept.
- The six required elements of the GHS label must include the product identifier, pictograms, signal word, hazard statements, precautionary statements, and the name, address, and telephone number of the chemical manufacturer, importer or other responsible party.
- The manufacturer's original label on any incoming regulated product must not be removed or defaced. The manufacturer's label and markings must be retained on the package or container until it is sufficiently cleaned of residue and purged of vapors to remove any potential hazards.
- Ensure all secondary containers are labeled in compliance with GHS labeling requirements. If GHS compliant information has not yet been provided by the manufacturer or chemical distributor, the SC must contact the manufacturer or chemical distributor and document in the chemical inventory when the GHS labeling information will be available, until the labeling requirement is fulfilled.
- In the United States, the container label shall be in English, although labels in other languages may be kept as well. Container labels in other languages for non-speaking English speaking workers will be made available when specified by the client for their project site or facility.
- Give employees required chemical-specific HazCom training using the chemical-specific training form included as Attachment 7 and ensure that the GHS supplemental JacobsConnect module has been completed.

8. Constituents of Concern

The table below summarizes the potential COC and their occupational exposure limit and signs and symptoms of exposure. The table also includes the maximum concentration of each COC and the associated location and media that was sampled (groundwater, soil boring, surface soil). These concentrations were used to determine engineering and administrative controls described in the "Project-Specific Hazard Controls" section of this HSP, as well as PPE and site monitoring requirements.

Potential Constituents of Concern

Contaminant	Location and Maximum[a] Concentration	Exposure Limits[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)
Radioactive Materials	Potential COC	0.2 mrem/hr and 100 mrem/y TEDE	NA	Long-term exposure increases the risk of developing several diseases such as lymphoma, bone cancer, leukemia.	NA
Radon and progeny	Potential COC	100 pCi/L averaged over a 40-hour workweek	NA	Long-term exposure increases the risk of developing several diseases such as lymphoma, bone cancer, leukemia.	NA
Radium-226 / Radium-228	Potential COC	0.2 mrem/hr and 100 mrem/y TEDE	NA	Long-term exposure increases the risk of developing several diseases such as cancer.	NA
Selenium	Potential COC	0.2 mg/m^3	1 mg/m^3 (as Se)	Irritation eyes, skin, nose, throat; visual disturbance; headache; chills, fever; dyspnea (breathing difficulty), bronchitis; metallic taste, garlic breath, gastrointestinal disturbance; dermatitis; eye, skin burns; In Animals: anemia; liver necrosis, cirrhosis; kidney, spleen damage.	NA
Thorium	Potential COC	0.2 mrem/hr and 100 mrem/y TEDE	NA	Long-term exposure increases the risk of developing several diseases such as lymphoma, bone cancer, leukemia.	NA

Contaminant	Location and Maximum[a] Concentration	Exposure Limits[b]	IDLH[c]	Symptoms and Effects of Exposure	PIP[d] (eV)
Uranium	Potential COC	0.20 mg/m^3 0.2 mrem/hr and 100 mrem/y TEDE	Ca (10 mg/m^3 [as U])	Dermatitis; kidney damage; blood changes. In Animals: lung, lymph node damage; Potential for cancer is a result of alpha-emitting properties and radioactive decay products (e.g., radon) [potential occupational carcinogen].	NA

Notes:

[a] Specify sample-designation and media: SB (Soil Boring), A (Air), GW (Groundwater), TK (Tank), SS (Surface Soil), SL (Sludge), SW (Surface Water), SD (Sediment).

[b] Appropriate value of permissible exposure limit, recommended exposure limit (REL), or threshold limit value (TLV) listed.

[c] IDLH = immediately dangerous to life and health; NL = no limit found in reference materials; Ca = potential occupational carcinogen.

[d] PIP = photoionization potential; NA = not applicable; UK = unknown. eV = electron volt

mg/m^3 = milligram(s) per cubic meter

mrem/h = milliroentgen equivalent man per hour

pCi/L = picocuries per liter

TEDE = total effective dose equivalent

Potential Routes of Exposure

Dermal: Contact with contaminated media. This route of exposure is minimized through use of engineering controls, administrative controls, and proper use of PPE.	**Inhalation:** Contaminated particulates. This route of exposure is minimized through use of engineering controls, administrative controls, and proper use of respiratory protection when other forms of control do not reduce the potential for exposure.	**Other:** Inadvertent ingestion of contaminated media. This route should not present a concern if good hygiene practices are followed (e.g., wash hands and face before drinking or smoking).

9. Site Monitoring

For each task listed in the table below, perform the associated monitoring to ensure the equipment is calibrated daily according to the manufacturer's recommendations. Document calibration and readings daily in project field logbooks. Retain area monitoring readings with project records.

Exposure records (radiation exposure dosimetry and heat stress monitoring) must be preserved for the duration of employment plus 30 years. Copies of all project exposure records (e.g., copies of field logbook pages where readings are recorded, as applicable, along with associated calibration) shall be sent to the Sector Safety Program Assistant for retention and also maintained in the project files. Subcontractors are responsible for monitoring and performing integrated personal sampling for their employees as documented in their HSP or, if permitted, according to the table below.

Heat stress monitoring forms are included as Attachment 7.

9.1 Direct Reading Monitoring Specifications

Based on the historical data provided to the HSM, previous investigations by other contactors, current analytical data, and modeling tables outlined in the previous section, air monitoring action levels, and engineering controls for current scope of work, the plan is as follows:

Instrument	Tasks	Action Levels[a]	Action to be Taken when Action Level reached	Frequency [b]	Calibration[c]
Radiation Detection Instrumentation [c] Ludlum 2360/43-93 (or equivalent) Ludlum 3/44-9 (or equivalent) Bicron micro rem (or equivalent)	All intrusive tasks	Twice Background	Safely pause work Notify PM and RSO and move away from location. Investigate cause of reading as directed Avoid confirmed anomalies Post area (if required)	As needed or required	Twice daily (Prior to and after work)

Notes:

[a] Action levels apply to **sustained** gross measurements above background.

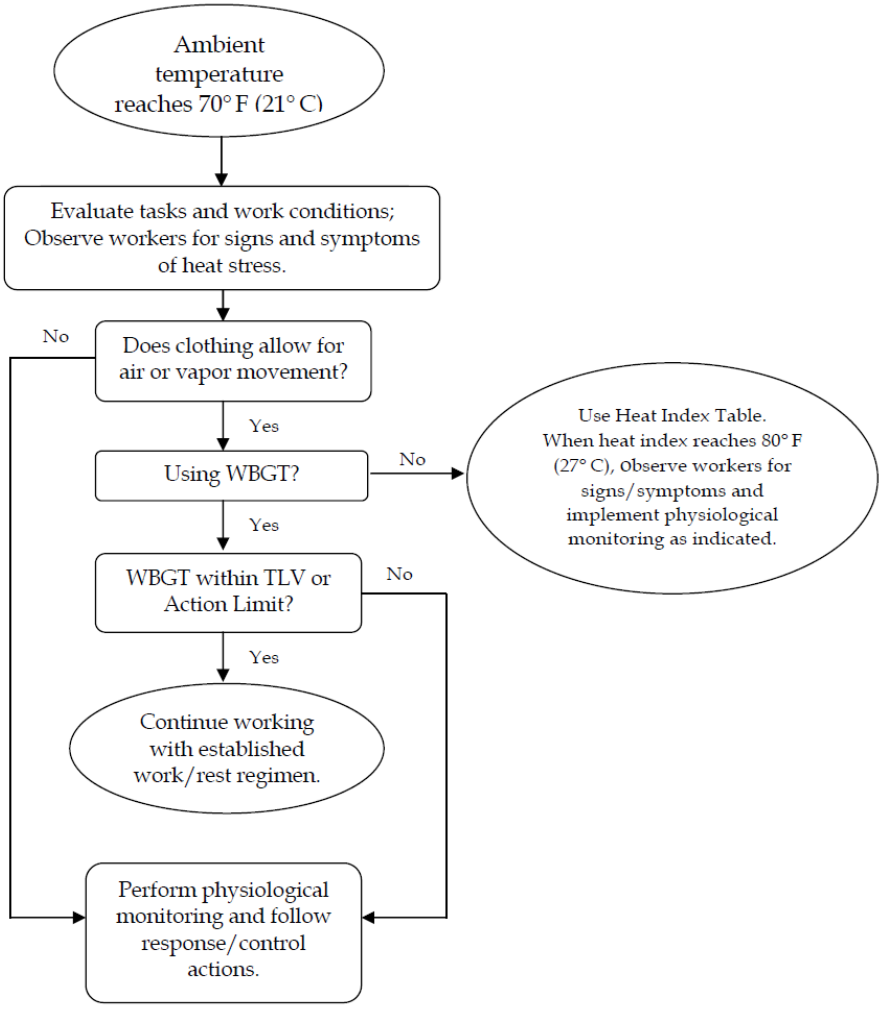
[b] The exact frequency of monitoring depends on field conditions and is to be determined by the SC-HW; generally, every 5 to 15 minutes if acceptable; it may be appropriate to do so more frequently. Record monitoring results. For documentation, include instrument and calibration information, time, measurement results, personnel monitored, and place/location where measurement is taken (for example, "Breathing Zone/MW-3," "at surface/SB-2," etc.).

[c] Radiation detection instrumentation shall be source checked by qualified personnel twice daily (prior to and after work.) The background used for comparison to the action level will be obtained, documented, and approved prior to use.

9.2 Thermal Stress Monitoring

9.2.1 Heat Stress Monitoring

Thermal Stress Monitoring Flow Chart



Note:
WBGT = wet bulb globe thermometer

9.2.1.1 Permeable Clothing – Monitoring Using Wet Bulb Globe Thermometer

A WBGT is the established and preferred means of measuring the environmental factors associated with heat stress and for providing indication of when physiological monitoring or rest regimens should be incorporated into the work schedule. The WBGT is the composite temperature used to estimate the effect of temperature, humidity, wind speed, and ***solar radiation*** on the human body.

When permeable work clothes are worn (street clothes or clothing ensembles over modesty clothes), physiological monitoring may be required based on the outcome of the WBGT measurements, taking into account the clothing adjustment factors. Use of the WBGT should generally begin when the heat index reaches 80 degrees Fahrenheit (°F) (27 degrees Celsius [°C]) as indicated in the Heat Index Table below, or when workers exhibit symptoms of heat stress as indicated above.

If the WBGT is within the TLV (acclimatized workers) or Action Limit (unacclimatized workers) per the tables below, then work may continue while maintaining the established work/rest regimen. If the WBGT reading meets or exceeds either the TLV or Action Level for a work/rest regimen of 15 minutes work and 45 minutes rest, then physiological monitoring will be implemented.

Screening Criteria for TLV and Action Limit for Heat Stress Exposure								
Allocation of work in a cycle of work and recovery	TLV (WBGT Values in °F/°C) (Acclimatized Workers)				Action Limit (WBGT Values in °F/°C) (Unacclimatized Workers)			
	Light	Moderate	Heavy	Very Heavy	Light	Moderate	Heavy	Very Heavy
75-100%	88/31	82/28	--	--	82/28	77/25	--	--
50-75%	88/31	84/29	82/28	--	83/29	79/26	75/24	--
25-50%	90/32	86/30	84/29	82/28	85/30	81/27	78/26	76/25
0-25%	91/33	89/32	87/31	86/30	86/30	84/29	82/28	81/27

Work Category Descriptions:	
Light	Sitting or standing with light manual work using hands or arms; occasional walking.
Moderate	Sustained moderate hand, arm, and leg work; light pushing and pulling; normal walking.
Heavy	Intense arm and trunk work, carrying, shoveling, manually sawing, pushing and pulling heavy loads, walking at a fast pace.
Very Heavy	Very intense activity at fast to maximum pace.

Notes:
WBGT values are expressed to the nearest degree.
"—"Dashes indicate the need for physiological monitoring because screening criteria are not recommended for this type of work.

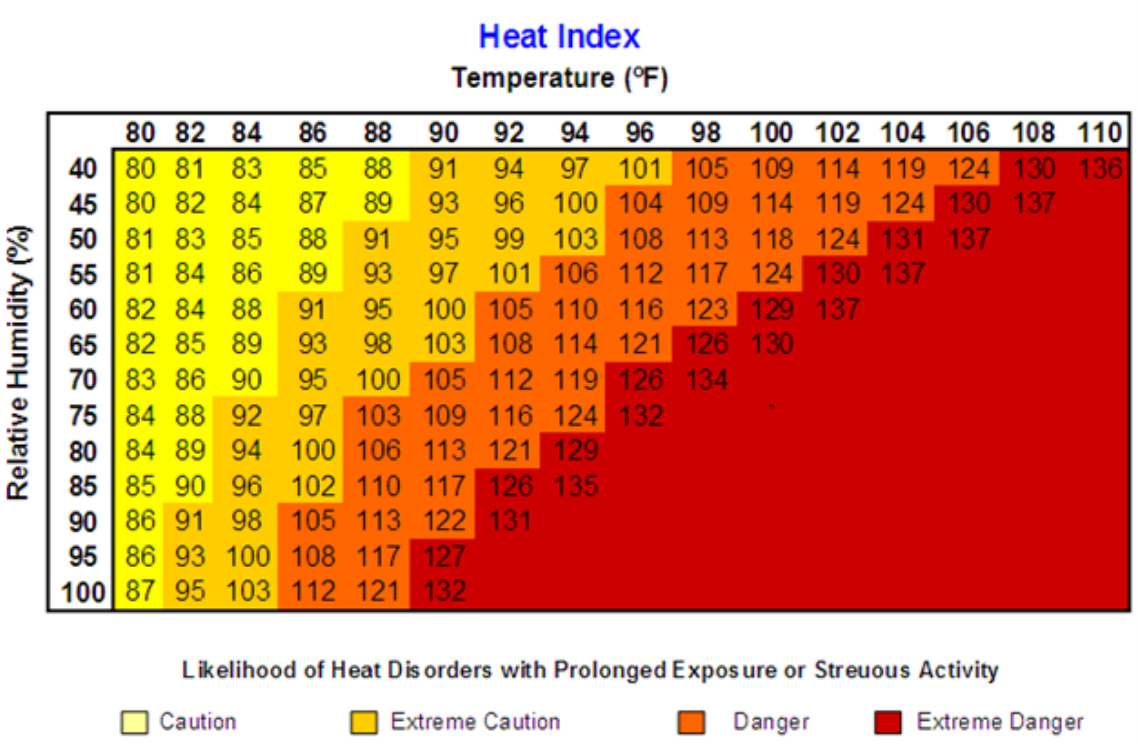
Clothing Adjustment Factors for Some Clothing Ensembles*	
Clothing Type	Addition to WBGT °F/°C
Work Clothes (sleeved shirt and pants)	0/0
Cloth (woven material) coveralls	0/0
Double-layer woven clothing	5.4/3
Polypropylene coveralls	0.9/0.5
Limited Use Vapor barrier coveralls	19.8/11

* These values must not be used for completely encapsulating (impermeable) coveralls/suits. Coveralls assume that only modesty clothing is worn beneath.

9.2.1.2 Thermal Stress Monitoring – Permeable or Impermeable Clothing

When **permeable work clothes** are worn (street clothes or clothing ensembles over street clothes), regularly observe workers for signs and symptoms of heat stress and implement physiological monitoring as indicated below. This should start when the heat index reaches 80°F (27°C) (see Heat Index Table below), or sooner if workers exhibit symptoms of heat stress indicated in the table above. These heat index values were devised for shady, light wind conditions; exposure to full sunshine can increase the values by up to 15°F (8°C). Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.

When wearing **impermeable clothing** (e.g., clothing doesn't allow for air or water vapor movement such as Tyvek), physiological monitoring as described below shall be conducted when the ambient temperature reaches 70° F (21°C) or sooner when climatic conditions may present greater risk of heat stress combined with wearing unique variations of impermeable clothing, or workers exhibit symptoms of heat stress



Heat Index	Possible Heat Disorders	Minimum Frequency of Physiological Monitoring
80°F – 90°F (27°C – 32°C)	Fatigue possible with prolonged exposure and/or physical activity	Conduct initial monitoring as baseline and observe workers for signs of heat stress and implement physiological monitoring if warranted.
90°F– 105°F (32°C – 41°C)	Sunstroke, heat cramps, or heat exhaustion possible with prolonged exposure and/or physical activity	Conduct initial monitoring as baseline, then at least every hour, or sooner, if signs of heat stress are observed.
105°F – 130°F (41°C – 54°C)	Sunstroke, heat cramps, or heat exhaustion likely, and heat stroke possible with prolonged exposure and/or physical activity.	Conduct initial monitoring as baseline, then every 30 minutes or sooner if signs of heat stress are observed.
130°F or Higher (54°C or Higher)	Heat/Sunstroke highly likely with continued exposure.	Conduct initial monitoring as baseline, then every 15 minutes or sooner if signs of heat stress are observed.

Source: National Weather Service

9.2.1.3 Physiological Monitoring and Associated Actions

For employees wearing permeable clothing, follow the minimum frequency of physiological monitoring listed in the Heat Index Table.

For employees wearing impermeable clothing, physiological monitoring should begin initially at a 15 minute interval, then if the employee's heart rate or body temperature is within acceptable limits, conduct the subsequent physiological monitoring at 30 minutes, and follow the established regimen protocol below.

When physiological monitoring is required, use either radial pulse or aural temperature and follow actions below:

- The sustained heart rate during the work cycle should remain below 180 beats per minute (bpm) minus the individual's age (e.g., 180 – 35 year old person = 145 bpm). The sustained heart rate can be estimated by measuring the heart rate at the radial pulse for 30 seconds as quickly as possible prior to starting the rest period.
- The heart rate after one minute rest period should not exceed 120 bpm.
- If the heart rate is higher than 120 bpm after the FIRST minute into the rest period, the next work period should be shortened by 33 percent, while the length of the rest period stays the same.
- If the pulse rate still exceeds 120 bpm at the beginning of the next rest period, the following work cycle should be further shortened by 33 percent.
- Continue this procedure until the rate is maintained below 120 bpm after the FIRST minute into the rest period.

Alternately, the body temperature can be measured, either oral or aural (ear) before the workers have something to drink.

- If the oral or aural temperature exceeds 99.6°F (37.6°C) at the beginning of the rest period, the following work cycle should be shortened by 33 percent.
- Continue this procedure until the oral or aural (ear) temperature is maintained below 99.6°F (37.6°C). While an accurate indication of heat stress, oral temperature is difficult to measure in the field, however, a digital aural (aural) thermometer is easy to obtain and inexpensive to purchase.
- Use the form attached to this HSP to track workers' measurements and actions taken.

9.2.1.4 Procedures for when Heat Illness Symptoms are Experienced

- **Always** contact the RHSM when any heat illness related symptom is experienced so that controls can be evaluated and modified, if needed.
- In the case of cramps, reduce activity, increase fluid intake, move to shade until recovered.
- In the case of all other heat-related symptoms (fainting, heat rash, heat exhaustion), and if the worker is a Jacobs worker, contact a WorkCare occupational physician at 1-888-449-7787 and immediately notify your supervisor and HSM.
- In the case of heat stroke symptoms, call 911, have a designee give location and directions to ambulance service if needed, follow precautions under the emergency medical treatment of this HSP.
- Follow the Incident Notification, Reporting, and Investigation section of this HSP.

9.2.2 Cold

9.2.2.1 General

Low ambient temperatures increase the heat lost from the body to the environment by radiation and convection. In cases where the worker is standing on frozen ground, the heat loss is also due to conduction.

Wet skin and clothing, whether because of water or perspiration, may conduct heat away from the body through evaporative heat loss and conduction. Thus, the body cools suddenly when chemical protective clothing is removed if the clothing underneath is perspiration soaked.

Movement of air across the skin reduces the insulating layer of still air just at the skin's surface. Reducing this insulating layer of air increases heat loss by convection.

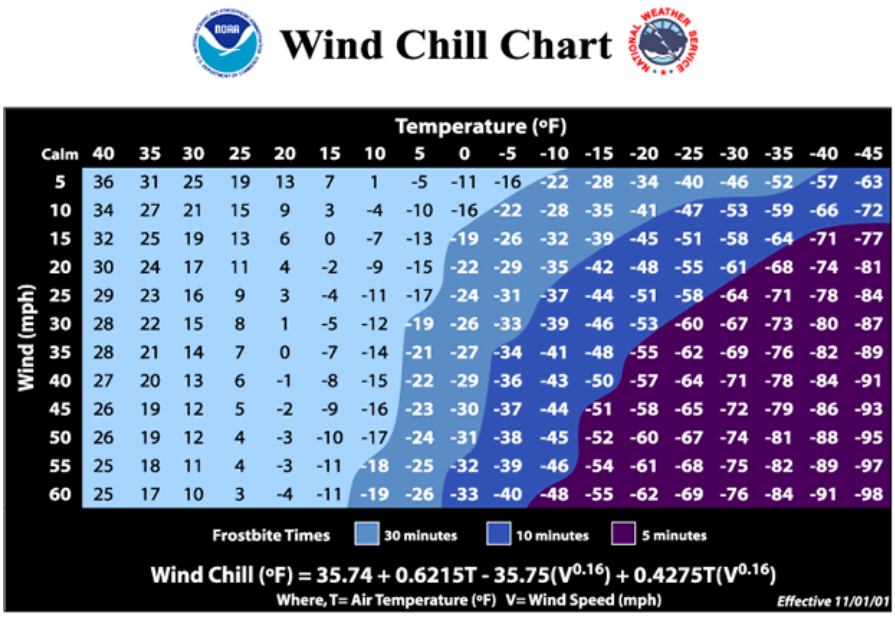
Non-insulating materials in contact or near-contact with the skin, such as boots constructed with a metal toe or shank, conduct heat rapidly away from the body.

Certain common drugs, such as alcohol, caffeine, or nicotine, may exacerbate the effects of cold, especially on the extremities. These chemicals reduce the blood flow to peripheral parts of the body, which are already high-risk areas because of their large surface area to volume ratios. These substances may also aggravate an already hypothermic condition.

9.2.2.2 Precautions

- Be aware of the symptoms of cold-related disorders, and wear proper, layered clothing for the anticipated fieldwork. Appropriate rain gear is a must in wet weather.
- Consider monitoring the work conditions and adjusting the work schedule using guidelines developed by the U.S. Army (wind-chill index) and the National Safety Council.
- Wind-Chill Index (below) is used to estimate the combined effect of wind and low air temperatures on exposed skin. The wind-chill index does not take into account the body part that is exposed, the level of activity, or the amount or type of clothing worn. For those reasons, it should only be used as a guideline to warn workers when they are in a situation that can cause cold-related illnesses.
- Persons who experience initial signs of immersion foot, frostbite, and/or hypothermia should report it immediately to their supervisor/PM to avoid progression of cold-related illness.
- Observe one another for initial signs of cold-related disorders.
- Obtain and review weather forecast – be aware of predicted weather systems along with sudden drops in temperature, increase in winds, and precipitation.

SYMPTOMS AND TREATMENT OF COLD STRESS			
	Immersion (Trench) Foot	**Frostbite**	**Hypothermia**
Signs and Symptoms	Feet discolored and painful; infection and swelling present.	Blanched, white, waxy skin, but tissue resilient; tissue cold and pale.	Shivering, apathy, sleepiness; rapid drop in body temperature; glassy stare; slow pulse; slow respiration.
Treatment	Seek medical treatment immediately.	Remove victim to a warm place. Re-warm area quickly in warm–but **not** hot–water. Have victim drink warm fluids, but **not** coffee or alcohol. Do not break blisters. Elevate the injured area, and get medical attention.	Remove victim to a warm place. Have victim drink warm fluids, but **not** coffee or alcohol. Get medical attention.



10. Personal Protective Equipment

10.1 Required Personal Protective Equipment

PPE must be worn by employees when actual or potential hazards exist and engineering controls or administrative practices cannot adequately control those hazards.

A PPE assessment was conducted by the RHSM and RSO (radiation hazards only) based on project tasks (see PPE specifications below). Verification and certification of assigned PPE by task is completed by the RHSM and RSO (radiation hazards only) who approved this plan. PPE for radiation concerns will be recommended by the RSO or designee. See the Handbook, Section 11, "Personal Protective Equipment," for requirements on the use, care, and maintenance of PPE.

The table below outlines PPE to be used according to task based on project-specific hazard assessment. If a task other than the tasks described in this table needs to be performed, contact the RHSM so the table can be updated.

Project-Specific Personal Protective Equipment Requirements[a]

Task	Level	Body	Head	Respirator [b]
• Site walks • Surveying/ utility locating • Radiation surveys for worker health and safety ** with no contact to contaminated media	Non-HW	☒ Work clothes (sleeved shirt, long pants) ☐ Cotton Coveralls ☒ Sturdy Work Boots ☐ Gloves (leather) ☒ ANSI/ISEA 107-2010 high-visibility vest ☐ Other:	☐ ANSI Z89.1 Hardhat [c] ☒ ANSI Z87.1 Safety glasses ☐ Hearing protection [d]	None required
• Drilling, soil sampling, well development, soil boring abandonment, borehole geophysical logging, and aquifer tests	Modified D	☒ **Coveralls:** Uncoated Tyvek; Polycoated Tyvek® is required when handling contaminated soil, water or fluids. ☒ ANSI/ISEA 107-2010 high-visibility vest ☒ Steel-toe, chemical-resistant boots OR steel-toe, leather work boots ☒ Outer boot covers ☒ Inner surgical-style nitrile ☒ Outer chemical-resistant nitrile gloves. ☐ Other: (specify)	☒ ANSI Z89.1 Hardhat [c] ☒ ANSI Z87.1 Safety glasses ☒ Hearing protection [d]	None required
• Groundwater sampling and decontamination	Modified D	☒ Work clothes ☐ Cotton coveralls ☒ ANSI/ISEA 107-2010 high-visibility vest ☒ Safety-toed boots ☐ Safety-toed rubber boots (can be deconned in a boot wash)	☒ ANSI Z89.1 Hardhat [c] ☒ ANSI Z87.1 Safety glasses ☒ Hearing protection [d]	None required

	☐ Outer boot covers ☒ Inner surgical-style nitrile ☒ Outer chemical-resistant nitrile gloves. ☐ Chemical protective suit when there will be contact with COC

Reasons for Upgrading or Downgrading Level of Protection (with RHSM approval)

Upgrade[f]	Downgrade
• Request from individual performing tasks. • Change in work tasks that will increase contact or potential contact with hazardous materials. • Occurrence or likely occurrence of gas or vapor emission. • Known or suspected presence of dermal hazards. • Instrument action levels in the "Site Monitoring" section exceeded. • Radioactive contamination detected.	• New information indicating that situation is less hazardous than originally thought. • Change in site conditions that decrease the hazard. • Change in work task that will reduce contact with hazardous materials.

Notes:
[a] Modifications are as indicated. Jacobs will provide PPE only to Jacobs employees.
[b] No facial hair that would interfere with respirator fit is permitted.
[c] Hardhat and splash-shield areas are to be determined by the SC.
[d] Ear protection should be worn when conversations cannot be held at distances of 3 feet (1 meter) or less without shouting.
[f] Performing a task that requires an upgrade to a higher level of protection (e.g., Level D to Level C) is permitted only when the PPE requirements have been approved by the RHSM and RSO (Radiation hazards only),, and an SC qualified at that level is present.

HW = HAZWOPER
ISEA = International Safety Equipment Association

11. Jacobs Worker Training

11.1 Jacobs Worker Training

The training shown below is required for Jacobs personnel working onsite. Copies of training materials will either be available onsite or readily available from the Jacobs health and safety training database system. See Section 12 of the Handbook for a description of HAZWOPER-related and SC training.

Required Jacobs Worker Training	Jacobs Task or Equipment-Specific Training (if performing task)
☒ 40-hour HAZWOPER Training	☒ HazCom
☒ 8-hour HAZWOPER Refresher	
☒ 3-day HAZWOPER OJT	
☒ Jacobs HSP Training	
☒ Jacobs HS&E Handbook	
☒ Jacobs AHAs	
☒ Subcontractor HSP	
☐ 10-hour OSHA Construction Safety Training	
☒ At least one SC-HW (refer to worker category for all applicable training needed)	
☒ SC (refer to worker category for all applicable training needed)	
Project-Specific Required Training	
☒ Drum Handling Training	☒ Manual Lifting Training
☒ Electrical Safety Training	☒ Other (specify): Selected Jacobs personnel will attend Red Cross' First Aid/CPR Training
☒ Hand Safety Training	☒ General Radiation Awareness Training
☒ Ionizing Radiation Training	

Note:

OJT = on-the-job training

11.2 Subcontractor Worker Training

The training shown below is required for subcontractor personnel working onsite. Copies of training will be available onsite.

Required Subcontractor Worker Training	Subcontractor Task or Equipment-Specific Training (required if performing this work)
☒ 40-hour HAZWOPER Training	☐ Fall Protection (site-specific)
☒ 8-hour HAZWOPER Refresher	☒ Forklift Operator
☒ 8-hour HAZWOPER Supervisor	☒ HazCom
☒ 3-day HAZWOPER OJT	☐ Ladder Safety Training
☒ Jacobs HSP Training	☐ Ionizing Radiation Awareness Training
☒ Subcontractor AHAs	☒ Qualified Drill Rig Operator
☒ Subcontractor HSP	☐ Other (specify):
☒ General Radiological Awareness Training	
☒ First Aid/CPR/ bloodborne pathogen – at least two people	
☐ Other (specify)	

The designation of **competent person** is a specific position of authority for a particular activity with defined roles and responsibilities and, in some cases, requisite qualifications. The subcontractor must designate a qualified competent person for the following tasks, and supporting documentation (for example, training documentation, resume of experience, activity-competent person designation is granted for, etc.) must be available for Jacobs review upon request.

Subcontractor Tasks Requiring a Competent Person
☐ Excavation Competent Person

11.3 HAZWOPER-Exempted Tasks

The following tasks are not within the scope of the HAZWOPER standard; therefore, HAZWOPER training is not required for workers performing these tasks:

Task	Task
• Site walks/surveying/utility locating	• Surface Geophysical Investigation

12. Medical Surveillance and Qualification

The following medical surveillance is required for Jacobs and subcontractor personnel working onsite. Copies of physician's medical opinion will either be available onsite, or for Jacobs staff, readily available from the Jacobs health and safety training database system. See Section 13 of the Handbook for a description of HAZWOPER, respirator user, and hearing conservation medical surveillance.

General Required Medical Surveillance	Job or Activity-Specific Medical Surveillance (required if performing this work)
☒ HAZWOPER Medical Clearance	☒ Noise
☒ Respirator Medical Clearance	☐ Baseline Blood Lead
	☐ Asbestos Medical Clearance
	☐ Other (specify):
Personnel or Tasks Not Requiring Medical Surveillance	
Site walks/surveying/utility locating	Surface Geophysical Investigation

13. Site Control Plan

Site control is established to prevent the spread of contamination throughout the site and to ensure that only authorized individuals are permitted into potentially hazardous areas. Task-specific control measures are listed below. **Use of the buddy system will be implemented unless a working alone protocol has been established and approved as indicated in Sections 5 and 6 of this HSP.**

Location	Site Control Procedure (discuss important elements such as signs, barricades, briefings, qualifications, required supplies and equipment, sign-in/out logs, etc.)
Support Zone	Identify support zones for each work location by selecting areas with low dose rates (at background) to eat, rest and to fill out paperwork.
Contamination Reduction Zone	Contamination Reduction Zones is where employees working in the EZ can perform dry decon of shoes and equipment before moving into a Support Zone. Follow the Decontamination requirements in Section 14 below after performing the above tasks and prior to eating, drinking, entering vehicles or packing equipment into vehicles.
EZ	The EZ will be areas where HAZWOPER tasks will take place. Due to the remote location of the field work demarcation of the EZ is not required. All non-HAZWOPER trained personnel shall be escorted by a SC-HW. The SC-HW shall ensure that these personnel do not enter the EZ. The SC-HW will demarcate the areas with pin flags or similar visual markings (do not perform any intrusive signage or posting more than pin flags), if necessary.

Note:
EZ = Exclusion Zone

14. Decontamination

See the Handbook, Section 15, "Decontamination," for a complete description of decontamination activities and diagrams of typical decontamination areas. Decontamination areas will be established for work in potentially contaminated areas to prevent the spread of contamination. Decontamination areas should be located upwind of the EZ where possible and should consider any adjacent or nearby projects and personnel. No eating, drinking, or smoking is permitted in contaminated areas and in exclusion or decontamination zones. All decontamination for radiological purposes will be approved by the RSO or designee and monitored by the onsite radiation protection staff.

All contaminated material generated through the personnel and equipment decontamination processes (such as contaminated disposable items, gross debris, liquids, sludges) will be properly containerized and labeled, stored at a secure location, and disposed of in accordance with project plans.

The SC-HW and RSO (for radiation related only) must establish and monitor the decontamination procedures and their effectiveness. Decontamination procedures found to be ineffective will be modified by the SC-HW. The SC-HW must ensure that procedures are established for disposing of materials generated on site. All radiological decontamination shall be performed under the direct supervision of the onsite radiation services group staff.

14.1 Decontamination Specifications

Type of Decon	Activity	Equipment	Process/Protocol
Personnel	Work in EZ's	Frisker Disposal bag or drum (used PPE) Potable water and soap or wet wipes for hand and face cleaning	Rubber Bootie removal if used, or use mechanical means, water or wet wipes on boots to remove gross contamination. Scan boots in accordance with radiation survey instruments SOP. Decon more if readings are above action level of two times background. Contain PPE for disposal—frisk to be sure disposable items are "free release" If not, segregate from other free release solid waste. Outer glove removal. Hand wash/rinse (soap and water is preferred method). Face wash/rinse (soap and water is preferred method).
Sample Equipment	GW/Soil Sampling	Frisker Disposal bag or drum (used wipes) Wet wipes for equipment cleaning	Gross decon of equipment (wet wipes or similar) Frisk equipment in accordance with radiation survey instruments SOP. Contain decon wipes for disposal—frisk to be sure disposable items are "free release" If not, segregate from other free release solid waste.

Type of Decon	Activity	Equipment	Process/Protocol
Vehicles	Vehicles/utility -terrain vehicle /recreational vehicles (park adjacent to mine site—avoid parking in impacted soils)	Frisker Disposal bag or drum (used wipes) Wet wipes for hard surface equipment cleaning HEPA-filtered Vacuum for soft surfaces	Dry decon of gross contamination, when necessary Frisk if driven into EZ in accordance with radiation survey instruments SOP. Weekly frisk vehicle interiors in accordance with radiation survey instruments SOP. HEPA-filtered vacuuming if contamination is detected.

Note:

HEPA = high-efficiency particulate air

14.2 Decontamination During Medical Emergencies

Standard personnel decontamination practices will be followed whenever possible. For emergency lifesaving first aid and/or medical treatment, normal decontamination procedures may need to be abbreviated or omitted. In this situation, site personnel shall accompany contaminated victims to advise emergency response personnel on potential contamination present and proper decontamination procedures.

Outer garments may be removed if they do not cause delays, interfere with treatment, or aggravate the problem. Protective clothing can be cut away. If the outer garments cannot be safely removed, a plastic barrier between the individual and clean surfaces should be used to help prevent contaminating the inside of ambulances or medical personnel. Outer garments can then be removed at the medical facility.

15. Communications

A primary and backup means of communication for field crews have been established as follows:

Type of Communication	Primary Means	Backup Means
Communication between field crew	☒ Voice ☐ Radio ☐ Phone	☐ Voice ☐ Radio ☒ Phone
Communication with Office crew	☐ Radio ☒ Phone	☐ Radio ☒ Phone (Safelight)
Communication with Fire and Emergency Services	☐ Radio ☒ Phone (see below)	☐ Marine-Band Radio ☒ Phone (Safelight)

16. Required Facilities and Equipment

The following facilities and equipment are required and used for safe completion of work:

Facility	Type	Location
☐ Worker Showers/lockers		
☒ Restrooms		Port-a-let or nearby establishment
☐ Emergency Eyewash		
☒ First aid kit/supplies		Field Vehicle
☒ Fire extinguishers	20 lb A, B, C	Field Vehicle
☐ Spill Kit(s)		
☒ Potable Water		Field Vehicle
☒ Shade/rest area	Vehicle	Field Vehicle
☒ Heated rest area	Vehicle	Field Vehicle

17. Emergency Response Plan

Personnel responsible for coordinating emergency situations during site activity are identified below. The list of emergency contacts is at the front of this HSP. Site maps showing assembly points and directions to the authorized medical facility are also at the front of this HSP. Documented rehearsal and critique of this plan is required at least once during the task or more often as necessary.

Responsibility	Name	Phone Number(s)
Emergency Response Coordinator	Name: Aleeca Forsberg	505-918-1800 (cell)
Type (desk or field) and frequency of rehearsal	NA	

If an emergency situation develops that requires evacuation of the work area, the following steps shall be implemented:

Evacuation Step	Methods and comments:
Notify affected workers	Notify team of any evacuation needed via voice, radio, in reach, or phone or satellite phone, use evacuation route and rally point.
Evacuate to safe location	Evacuate to the designated rally point (determined daily by FTL or SC)
Assemble and account for workers	SC to account for all workers.
Notify Supervisor/Manager	Notify Jacobs PM, SC, and RHSM of incident
Complete incident report	Per PM, RHSM

Potential emergency situations and response actions are identified below.

In case of:	Response actions:
Injury or illness	Major Medical: FA/CPR trained personnel respond. If additional response required, contact local emergency responders and 911. Have a designee assist with guiding ambulance service to site if needed. If Jacobs BIAF employee, call WorkCare at 888-449-7787. Minor Medical: FA/CPR trained personnel respond. If Jacobs BIAF employee, call WorkCare at 888-449-7787. Transport to occupational health clinic if advised to do so.
Chemical exposure	Decon affected employee, seek medical treatment if necessary. Utilize eyewash and shower if needed. If additional response required, contact local emergency responders. If Jacobs BIAF employee, call WorkCare at 888-449-7787.
Fire or explosion	Evacuate site to designated location, call 911. Provide necessary first aid, seek treatment if necessary. For small fires, only respond to trash can size fires with site fire extinguishers.

In case of:	Response actions:
Adverse weather	Notify personnel, seek shelter. Communicate actions and hazards with the other teams using the inReach texting feature; it is VERY important for the team working nearest the approaching weather or with better line-of-sight to communicate to other teams, especially when teams are split between mesa tops and canyon bottoms. Abide by the 30/30 rule when thunder and lightning are present. Anticipate deterioration of road conditions and leave field if doing so safely is an option; retreat to more improved or paved roads.
Heat Stroke	Call 911, have a designee give location and directions to ambulance service if needed. If Jacobs BIAF employee, call WorkCare at 888-449-7787.
Material spill or release	Appropriate spill response materials for all chemicals must be present at the job site. Only qualified (by training and previous experience) who have proper PPE and equipment available shall provide spill response operations, when safe to do so.
Active Shooter	Have a plan when working on client premises—look for at least two evacuation routes/points. Program emergency numbers in your phone (client emergency service numbers, RHSM, PM, Supervisor, WorkCare, Global Assistance and Response number). If an active shooter is on the premises follow Run, Hide, Fight: • Run: Leave belonging behind. Try to get out of the building or danger area if possible, using exits. Call 911 when in a safe area and then call the Global Assistance and Response Hotline (443-221-6281) PM and RHSM. • Hide: Act quickly—Find a place, closet or office, or something to hide behind out of the vision of shooter. Lock or barricade or otherwise secure the spot if possible. Turn off lights, silence cell phones. Stay calm and quiet • Fight: Last resort! If your life is at risk—work alone as or as a group. Use improvised weapons, act aggressively, disarm or injure the shooter, commit to your actions. When law enforcement arrives—stay calm—show hands, spreading fingers. Avoid sudden movements, yelling or pointing. Allow law enforcement to do their job to control the area. Their first priority is finding the shooter. Once you are safe—be sure to notify your supervisor, the PM, and HSM of your status. The PM/Supervisor shall follow the incident reporting process, including notification in accordance with the incident reporting flowchart. RHSM will complete an Intelex report.

Evacuation Signals:	Meaning:
Grasping throat with hand	Emergency-help me.
Thumbs up	OK; understood.
Grasping buddy's wrist	Leave area now.
Continuous sounding of horn	Emergency; leave site now.

In the event of a large quantity spill, notify emergency services. Personnel discovering a spill shall (only if safe to do so):

- Stop or contain the spill immediately (if possible) or note source. Shut off the source (e.g., pump, treatment system) if possible. If unsafe conditions exist, then leave the area, call emergency services, inform nearby personnel, notify the site supervisors, and initiate incident reporting process. The SC shall be notified immediately.
- Extinguish sources of ignition (flames, sparks, hot surfaces, cigarettes).
- Clear personnel from the spill location and barricade the area.
- Use available spill control equipment in an effort to ensure that fires, explosions, and releases do not occur, recur, or spread.
- Use sorbent materials to control the spill at the source.
- Construct a temporary containment dike of sorbent materials, cinder blocks, bricks or other suitable materials to help contain the spill.
- Attempt to identify the character, exact source, amount, and extent of the released materials. Identification of the spilled material should be made as soon as possible so that the appropriate cleanup procedure can be identified.
- Contact the RHSM, Project EM, and RSO (for radiation related incidents only) in the event of a spill or release immediately so evaluation of reportable quantity requirements and whether agency reporting is required.
- Assess possible hazards to human health or the environment as a result of the release, fire or explosion.
- Follow incident notification, reporting, and investigation section of this plan.

18. Incident Notification, Reporting, and Investigation

18.1 Incident Notification

All employees and subcontractor employees shall immediately report any incident (including "near misses,") in which they are involved or witness to their supervisor.

The Jacobs or subcontractor supervisor, upon receiving an incident report, shall inform his immediate superior and the Jacobs SC.

The SC shall immediately report the following information to the RHSM and PM by phone and e mail:

- Project name and site manager
- Date and time of incident
- Description of incident
- Extent of known injuries or damage
- Level of medical attention
- Preliminary root cause/corrective actions

If the incident was an environmental permit issue (potential permit non-compliance, other situation that result in a notice of violation) or a spill or release, contact the Project EM immediately so evaluation of reportable quantity requirements and whether agency reporting is required.

18.2 Drug and Alcohol Testing for Jacobs Employees

As required by Jacobs Policy 810, U.S. employees are subject to post-incident and reasonable suspicion drug and alcohol testing. The employee must submit to drug and alcohol testing if the supervisor has a reasonable suspicion and when any of the following occur:

- Work-related injury in which the Company reasonably believes (under the Reasonable Suspicion provisions in the Policy) that drug and/or alcohol use is a contributing factor
- Incident resulting in property damage in excess of $500 as determined by the Company
- Injury on or in Company Property/Workplace (to employee or third parties) involving the employee's use of heavy machinery as determined by the Company
- Incident considered to be a serious near-miss injury that occurs in the field or in the office as determined by the Company and where the Company reasonably believes (under the Reasonable Suspicion provisions in the Policy) that drug and/or alcohol use is a contributing factor to the serious near-miss injury
- Other circumstances as dictated by Employee Relations
- An employee contributes to any of the above.

18.3 Drug and Alcohol Testing for Subcontractors

The drug and alcohol testing requirements stated above apply to subcontractors when required by the subcontract.

18.4 Intelex System

The SC shall contact the HSM to complete an entry into the Intelex database system located on JacobsConnect within 24 hours and finalize those forms within 3 calendar days.

18.5 Injury Management/Return to Work (for United States-/Puerto Rico-based Jacobs Staff Only)

In the event of an injury, or potential injury (i.e., involvement in motor vehicle collision with no apparent injury; a puncture wound with no bleeding or apparent infection, etc.), the following actions shall be taken:

- Employee informs their supervisor.
- Employee immediately calls the Injury Management Program toll-free number 1-888-449-7787 and speaks with the occupational injury nurse. This number is operable 24 hours per day, 7 days a week. **Employees are encouraged to enter this phone number into their cell phones prior to starting field work.**
- Supervisor ensures employee immediately calls the Injury Management Program number. Supervisor makes the call with the injured worker or for the injured worker, if needed.
- Nurse assists employee with obtaining appropriate medical treatment, as necessary, and schedules clinic visit for employee (calls ahead and assists with any necessary follow-up treatment). The supervisor or SC accompanies the employee if a clinic visit is necessary to ensure that employee receives appropriate and timely care.
- Supervisor or SC completes the Intelex entry or Incident Report Form immediately (within 24 hours) and forwards it to the PM and RHSM.
- Nurse notifies appropriate Jacobs staff by email (supervisor, Health & Safety, Human Resources, Workers' Compensation).
- Nurse communicates and coordinates with and for employee on treatment through recovery.
- Supervisor ensures suitable duties are identified and available for injured or ill workers who are determined to be medically fit to return to work on transitional duty (temporary and progressive).
- Supervisor ensures medical limitations prescribed (if any) by physician are followed until the worker is released to full duty.

18.6 Serious Incident Reporting Requirements

Serious incidents include the following:

- Work-related death, or life-threatening injury or illness of a Jacobs employee, subcontractor, or member of the public
- Kidnap or missing person
- Acts or threats of terrorism
- Event that involves a fire, explosion, or property damage that requires a site evacuation or is estimated to result in greater than $500,000 in damage
- Spill or release of hazardous materials, radioactive materials, or substances that involves a significant threat of imminent harm to site workers, neighboring facilities, the community or the environment.

If an incident meets the "Serious Incident" criteria, the PM shall immediately contact the Global Assistance and Response Hotline at +1-443-221-6281 then follow the standard incident reporting procedure. Following this reporting, the PM shall notify the RSO (for radiological spills only).

19. Inspections

19.1 Project Activity Self-assessment Checklists

The following self-assessment checklists (included in Attachment 8) are required when the task or exposure is initiated and weekly thereafter. The checklists shall be completed by the SC or other Jacobs representative and maintained in project files.

Biological Safety	Hand and Power Tools	Personal Protective Equipment
Drilling	Hazardous Materials Handling	
Forklift Safety	Manual Lifting	

19.2 Agency Inspections

If a federal or local agency (e.g., OSHA, local water board, EPA) announces it will be performing inspection, either announced or unannounced, see Attachment 8, Beyond Zero Bulletin on Agency Inspections. Contact the PM, RHSM, and EM as soon as you receive notice.

19.3 StepBack Process

(Reference BIAF Global Guide, BIAF-350-G-01, HS&E StepBack Process)

The StepBack process (Attachment 8) applies to all Jacobs employees and subcontractors who are performing tasks in an office or at a site location. It is a critical thinking process to supplement HS&E planning tools such as the PTSP, AHAs, and HSPs and should be applied at the start of shift, after a break, when the task or location changes, when adjacent work may present additional hazards, or any other hazard or change to task is identified. Observed hazards will be documented on the Observed Hazard Form included in Attachment 3.

The process consists of three key steps:

Identify: Prior to and while executing the task, "StepBack" and identify any new hazards or changes to the environment, including reviewing personal physical and mental preparedness. Ask the questions on the card (see wallet card or use the form in Attachment 9 of this HSP); if "yes" is the answer to all questions, the task may proceed. If any answer is "no," STOP work and contact the HSM/EM to work through the following steps to identify corrective actions. The Stop Work Order form, included in Attachment 10, should be used to document the work stoppage.

Evaluate: Assess the risk associated with the new hazard or change to the environment to understand the level of risk.

Act: Take appropriate action. Engage with project management or supervisors as necessary to identify risk mitigation measures. Mitigation measures (changes to means/methods, use of different PPE than specified in the AHA, or similar) would require RHSM involvement and potentially revision to the AHA and/or HSP.

Completion: After the job has finished ask:

- Did you feel safe doing the job?
- Were others nearby working safely?
- Can improvements be made next time?

If any of these questions yield a "no" response, follow-up with feedback to the PM, RHSM, or your supervisor.

19.4 BeyondZero Observations

(Reference Jacobs Business Management System WI, JJ-HS-WI-0306-JJ, Safety Observation Report [SOR])

SORs are tools:

- That can be used for both a planned or an unplanned observation of behaviors or condition in the work area
- For improving leadership, workforce behaviors, and peer to peer communication
- To provide positive reinforcement and correct unsafe behaviors or unsafe conditions
- To document something witnessed outside of work hours that others can learn from

SORs are a required element of our BeyondZero Culture of Caring. The SOR program will generally be used in place of the legacy Jacobs Safe Behavior or Work Observation programs, unless stated otherwise based on client program needs. Performing a SOR is something that everyone should be considering both in the workplace and outside of the workplace as often as possible. The minimum frequency for submitting an SOR is once per week.

Everyone is asked to participate: all office staff, management, PMs, supervisors, SCs, and field staff whether in an office, traveling, at a project site or anywhere in between. After you've discussed the observation with the affected parties (see note* below), use the SOR app on your phone or tablet, or use your computer to log onto JacobsConnect and enter the SOR into the system. Once submitted, parts of the SOR cannot be changed, so contact your HSSM/EM if you need help entering an observation. Once submitted, the SOR will be routed to your supervisor (and PM if you entered the project number). A feature to this system is photos can be attached.

*** Note**: Entering the correct Worst Potential Severity (WPS) code is important. The WPS code is a way of rating an event based on the likelihood of what could have happened versus what actually happened. **When a WPS of 3, 4, or 5 is indicated, the SOR is elevated to higher levels of management; therefore, be sure to notify your HSM, supervisor, and/or PM of the event prior to submitting a SOR with a WPS of 3 or greater. Likewise, if any follow-up action is needed, regardless of WPS, notify the HSM and/or PM and supervisor.**

***For any incident with a WPS greater than 3, or when further action is necessary, notify your HSM/EM and PM/supervisor as soon as possible.**

Worst Potential Severity Table

WPS	Injury -Illness	Environment	Property Damage
5	Fatality or total permanent disability	Serious offsite impact, significant remediation required	USD$> 3 million
4	Partial disability; life changing; intensive care	Significant offsite impact, some remediation required	USD$ 300K-3 million
3	Urgent treatment, surgery	Release significantly above reportable limit of some local impact	USD$ 30K-300K
2	Medical treatment to prevent deterioration	Release above reportable limit or minor impact	USD$ 3K-30k
1	Simple, immediate treatment	Small release contained onsite and no impact	USD$ less than 3K

How do I complete a SOR?

- Go to JacobsConnect and use the electronic SOR tool.
- Download the SOR app from the Jacobs Appstore
- Use the hard copy form included in Attachment 7 to this HSP.
- SORs can be chosen by the Center of Excellence as a winner of the SOR of the Month.

20. Records and Reports

See the Handbook, Section 19, "Records and Reports," for a complete description of HS&E record keeping requirements. Below are examples of records that must be maintained as the project progresses:

- Exposure records includes air monitoring data (including calibration records), SDSs, exposure modeling results
- Training records
- Respiratory fit test records
- Incident reports, investigations, and associated backup information
- Federal or state agency inspection records
- HS&E audits and assessments
- Confined space entry permits
- Waste profiles
- Agency submittals
- Emergency equipment inspection records
- Equipment maintenance
- Equipment inspections
- Daily Safety Meeting Sign-In forms/PTSPs
- Self-assessment checklists
- SORs
- Waste analytical data
- Manifests
- Reports and certifications

21. Employee Signoff Form

EMPLOYEE SIGNOFF FORM

Health and Safety Plan

The Jacobs project employees and subcontractors listed below have been provided with a copy of this HSP, have read and understood it, and agree to abide by its provisions.

Project Name: **Project Number:**

EMPLOYEE NAME (Please print)	EMPLOYEE SIGNATURE	COMPANY	DATE

Attachments

Attachment 1
Field Change Request Form

Health and Safety Field Change Request (FCR)			
Date of Change:			
FCR No. (assigned by RHSM):			
Applicable Health and Safety Plan Title:			
Project Number:		Project Location:	
Subject of Change:			
Recommended Changes:			
Reason for Change:			
Submitted by:	**Company**:		**Date**:
Review & Acceptance:			
Manager of Projects:	**Date:**		
Health & Safety Manager:	**Date:**		
EM:	**Date:**		
Distribution:			
1. Field staff	2. PM/SC	3.	4.
5.	6.	7.	8.

Attachment 2
Chemical Inventory/Register Form

Chemical Inventory/Register Form

Refer to SOP HS&E-107, Attachment 1, for instructions on completing this form.

Location:
Safety Coordinator:
☐ Office ☐ Warehouse ☐ Laboratory ☐ Project:
Project No.:

Regulated Product	Location	Container labeled (✓if yes)	SDS available (✓if yes)

SDS for the listed products will be maintained at:

Attachment 3
Observed Hazard Form

Observed Hazard Form

Name/Company of Observer (*optional*):

Date reported**:**_____

Time reported**:**_____

Contractor/s performing unsafe act or creating unsafe condition**:**

1. _____

2. _____

3. _____

Unsafe Act or Condition**:**

_____
_____
_____
_____
_____
_____
_____
_____
_____

Location of Unsafe Act or Condition**:**

Name of Jacobs Representative:

_____

Corrective Actions Taken**:** Date**:** _____

_____
_____
_____
_____
_____

Project Safety Committee Evaluation**:** Date**:** _____

_____
_____
_____
_____

Attachment 4
COVID-19 Management Plan for External Release

Jacobs

COVID-19 Management Plan
For External Release

Executive Summary

The global community is facing an unprecedented crisis and the ramifications of coronavirus disease (COVID-19) are unlike any we've ever experienced. Jacobs has taken many steps in the face of COVID-19 for the safety and well-being of our people and communities, and at the same time delivering on the commitments to our clients. While today's challenges are uncharted territory for all of us, the safety and well-being of our people and communities remain our top priority.

Jacobs adopted mitigation strategies and protocols from the World Health Organization (WHO), the United States Centers for Disease Control and Prevention (CDC), the European Centers for Disease Control, and other equivalent health authorities for the respective countries where we operate. Recognizing that world standards and guidelines from the WHO and the CDC may change, we actively revise and adjust our protocols as we receive the most up-to-date information for this rapidly evolving situation. This Plan describes the guidance in place to protect Jacobs employees as well as our subcontractors, and ultimately, others around us, as well as protocols for when positive cases for Jacobs employees or subcontractors are identified.

Our COVID-19 Management Plan includes:

1) **Leadership**: Our response to the COVID-19 pandemic is coordinated by a cross-functional global Crisis Management Team (CMT) that regularly reports into the office of the Chair and CEO and is connected to our regional CMTs in North America, Europe/Middle East/Africa, and Asia Pacific. These teams comprise senior leaders from our Health, Safety & Security, Legal, Human Resources (HR), Information Technology, Real Estate, Operations, and Communications organizations, operating in a coordinated and integrated manner.

2) **Communications**: Keeping our employees informed through our Global and Regional CMTs is critical. We established a Coronavirus Update page on our global intranet that provides employees direct access to WHO and CDC guidance, information from official health authorities, as well as briefings, Frequently Asked Questions (FAQs), travel advisories, and health information from our global leadership team and the CMTs. The information is updated daily. Our Chair and CEO also provides a weekly email message and holds a weekly virtual town hall for all employees to ensure communications regarding health and safety, protocols, remote working updates, etc. are driven down throughout the organization.

3) **Companywide Travel Restriction:** We have restricted travel through September 30, 2020. Client-critical travel to address client imperatives that can't be completed virtually requires approval from a Senior Vice President. Client-critical international travel requires approval from an Executive Vice President.

   We are enforcing **due diligence around pre-trip planning**, starting with evaluating whether an in-person trip is required or could be covered virtually. For approved client-critical travel—or even personal travel—planning extends to threat-level assessment of COVID-19 at the travel destination, preventive measures during travel, an understanding of the rules and guidelines for re-entry to the home location, including requirements for quarantine that align with the health authority requirements. We also provide guidelines for minimizing COVID-19 exposure while in the air, operating a vehicle, and lodging at locations outside the home.

   Jacobs' ability to work in our offices and at sites remains dependent on applicable exemptions specified within Country, State, Province, and local guidelines, executive or judicial orders in place to prevent the spread of COVID-19. Where our work activities at a location meet the requisite definition of an Essential Business or Service under the applicable order and where such work can't be performed remotely, the Company will issue to impacted employee(s) a COVID-19 Travel Authorization Document (TAD) after the travel risk assessment has been completed. The TAD, along with a client letter (where applicable), serves as indication that the individual is exempt from certain restrictions under the executive or judicial order.

   We have established return protocols for both client and personal travel from or through high-risk areas. This includes self-imposed isolation for a minimum of 14 days and requires an employee to meet the CDC or

WHO guidance for returning to work or be cleared by their physician before returning to work to ensure the safety and well-being of others.

4) **Meetings and Visitors**: We are limiting face-to-face meetings, and most of our offices are temporarily closed. As offices reopen and at project sites that are active, we are asking our visitors to confirm they have not travelled to or from any high-risk countries identified by the WHO or other applicable health authorities, have not been exposed to someone with COVID19, and are not experiencing any COVID symptoms. When in-person meetings and visitors are required, we are adhering to applicable guidelines regarding physical proximity.

5) **Exposure and Quarantine**: We have implemented a global prevention protocol for all locations that report a positive case of COVID-19 where Jacobs employees are present, including implementing deep cleaning guidance for the use of quick-kill surface hospital grade or U.S. Environmental Protection Agency-registered disinfectants (or equivalent in other countries) and to aid in comprehensive application. We have also established and cascaded protocols to employees regarding actions to take whether at home or at work when there is a potential or real exposure, when symptoms are present, or when there is a confirmed case.

6) **Contingency Planning**: We have activated contingency plans for remote working. In the event of project site closures or access restrictions to project or field sites, we will continue to work closely with our clients and customers to establish project-specific plans tailored to each situation.

1. COVID-19 Precautions on Jacobs Sites

The virus responsible for COVID-19 is believed to spread mainly from person-to-person contact (e.g., coughs, sneezes, contact with contaminated surfaces such as equipment or tools); therefore, when conducting work activities at Jacobs project locations, we're following COVID-19 protection protocols until further notice. The guidance surrounding COVID-19 is fluid and no one document or set of documents can cover all risks associated with this pandemic. We are asking our site and project leaders to adjust daily based on how guidance may relate to their specific site location.

The following precautions are in effect or will be implemented:

1) General Requirements:

- Our senior site leader will notify clients, subcontractors, third-party contractors, and our appropriate regional CMT if there is a positive or presumptive positive case on a site.
- All potentially affected personnel will be notified of a positive case, either by Jacobs (for our employees or subcontractors), or by the client for contractors not directly affiliated with Jacobs. The names of COVID19-positive employees will not be shared unless permission from the employee is granted.
- The appropriate HSE lead, in coordination with our senior site leader, will determine the appropriate precautions for hand hygiene, such as the frequent use of hand sanitizer with at least 60% alcohol content and proper cough and sneeze etiquette. For example, used tissues must be disposed of immediately and people should avoid touching their faces (eyes, nose, mouth).
- Other training will be provided based on specific location risks.
- Our site leader(s) will review the CDC's COVID-19 guidance document, awareness information, and signs and symptoms (such as fever, cough, and shortness of breath) with all field staff.
- Site leader(s) will follow Jacobs Global Security & Resilience Companywide Travel Restriction, Preparedness Pamphlet, and FAQ posted on the Coronavirus Information site on the Jacobs intranet. Refer to Appendix A, "*CDC- What You Need to Know*."
- Management will monitor local public health agency communications and ensure all local agency guidance and restrictions are followed.
- If project team members have specific COVID-19 concerns (they are in a high-risk category or a high-risk location), the supervisor, HSE lead, or HR lead can be contacted so necessary accommodations can be considered.
- Personnel who are experiencing signs or symptoms of COVID-19 or any flu-like symptoms should **not report to a project site for work**. They are to contact their supervisor, project manager, HR lead, and HSE lead.
- If an employee comes to a work site exhibiting COVID-19 signs/symptoms (fever, cough, shortness of breath) or develops symptoms while they are already onsite, they will be isolated and instructed to leave site as soon as possible and safe to do so.
- Where necessary, health assessment screenings will be conducted to align with local or client requirements. Site leaders(s) will follow the "COVID-19 Working Onsite During a Pandemic" guidance posted on the Coronavirus Information site on the Jacobs intranet.
- In office settings on project site locations, we've asked employees to take additional precautionary measures such as wiping down their desks, keyboards, and telephones with a disinfectant at the start and end of their workdays. We've also provided guidance to not clean up after others, especially in common areas. At smaller field sites (such as a trailer setting), our staff will wipe down work surfaces like desks, keyboards, mouse pointers, cell phones, telephones, radios, and copiers at least once a day

with disinfecting wipes or solution. Periodically throughout the day, we've recommended that employees disinfect surfaces or tools they commonly use, such as pens, staplers, clipboards, door handles/knobs, coffee pot handles, and similar.

- We've provided guidance to refrain from person-to-person physical contact (handshakes, high-fives, and so on), sharing personal items such as pens, glasses/mugs, and cellphones, and to use disposable gloves whenever feasible for tasks that involves handling items others have handled.
- We're practicing physical distancing by maintaining 6 feet from each other unless essential to complete a job task.
- We've eliminated group meetings to the maximum extent possible and limited in-person attendance to essential personnel. If in-person meetings are necessary, we've given instructions to maintain distance from each other (~6 feet) and follow WHO/CDC guidance for face coverings. We've shared guidance to use other means of communication for group-wide messages (phone, skype, radio, message boards, written communications).
- **Use of face coverings**. The CDC recommends wearing cloth face coverings when people have to go out in public, for example to the grocery store or to pick up other necessities, especially in areas of significant community-based transmission. The need for Jacobs employees to wear a face covering while on a project site is based upon a risk assessment, unless they are working under client or local municipality mandates. Refer to Appendix B for guidance on making, wearing, and cleaning cloth face coverings.

2) **Business Resilience:** To ensure business continuity we are currently ensuring isolation between our operations. Therefore, as far as is reasonably practicable, we are avoiding physical interaction between each project, as well between our main offices and project sites.

   Project Managers will consider measures that can be taken to ensure project resilience such as:

   - Split shifts – For work in teams
   - Split offices/sites – Consider having teams working in different parts of the project with zero cross over.
   - Shut down considerations – Refer to HSSE COVID-19 Temporary Field Project Shutdown Guidance located on the Coronavirus Information site on the Jacobs intranet.

3) **Vulnerable Groups:** Some staff will be genuinely concerned or unable to work on site at this time (such as care givers of parents). In keeping with our culture of caring, we must assess each case individually, discuss the concerns, and do everything we can to allow that colleague to work remotely; where this is not possible, this should be raised to the project management.

4) **Visitor Management:** Take steps to reduce the number of visitors coming to the site office. Require visitors to book their appointment in advance and only allow visitors who are critical to the operation of the site/office. A project manager or another senior project team member must approve all visitors in advance of the visit. Maintain clear signage at reception informing visitors of additional control measures and requesting that they disclose where they have travelled in the last 14 days and if they are displaying any potential COVID-19 symptoms. Face coverings for visitors may be required based on the location, timeframe, and specific situation.

5) **Meetings:** Make use of technology for meetings with clients and contractors where possible in order to avoid the need for in-person meetings. Where meetings are required or essential, ensure the number of attendees is kept to a minimum and social distancing is maintained (6 feet or more).

6) **Hard Copy Transmittals:** Conduct an assessment and determine methods to stop the submission of all hard copies of documents (drawings, method statements, letters, etc.) and request any subcontractors to make all submissions electronically.

7) **Travel, Site Surveys, and Inspections:** Traveling in a car and being outdoors is a relatively low-risk activity, although overnight accommodation in a hotel may be required. Assess your tasks and travel arrangements to site and on site, limit the number of passengers in vehicles to maintain social distancing. Where teams of two or more employees are traveling together, each one should maintain good personal hygiene and they should avoid crowded places such as restaurants.

8) **Jacobs Site Work:** Site work is an integral part of our business and the continuation of site work is considered business critical (Business Continuity). Site work should continue unless directed by the government authorities, the client, or Jacobs leadership. The following measures are suggested:

   - On project sites, where possible, undertake site work such as inspections during times when social distancing of at least 6 feet or more from other persons can be maintained at all times.
   - No one on site should be at work if they are unwell or displaying any COVID-19 or flu-like symptoms (coughing, fever, fatigue, shortness of breath). If an employee begins to have symptoms, they should isolate immediately and notify their project manager verbally (phone) or electronically. If an employee is noticed displaying COVID-19 or flu-like symptoms by another worker, that worker must notify their supervisor or project manager.
   - Everyone is empowered and expected to stop work if they believe their work or the work of their team or others is unsafe or is putting others at increased risk.
   - Where close contact or contact with individuals is unavoidable but critical, the tasks must be risk assessed with the support of an HSE professional (and if necessary, industrial hygienist or medical professional). The principles of prevention must be applied, and if necessary, as a last resort, personal protective equipment must be provided, to include disposable coveralls, safety glasses, and any other protective clothing deemed necessary.
   - Watch out for your team members, it is normal to feel down, low, anxious at this time and many will be distracted and may be complacent about other project safety risks, ensure we look out for one another and stay safe.
   - Ensure that there is an adequate supply of running water as well as soap and disposable hand towels or alcohol-based hand wipes in each of the wash facilities. Keep hand sanitizer in the office in easily accessible areas outside toilets, break rooms, and the office entrance, and encourage staff to use it frequently. Maintain extra vigilance around cleaning in the office and on site.
   - Use the COVID-19 Field Checklist located on the Coronavirus Information site on the Jacobs intranet.
   - For projects that require temporary shut-down due to the COVID-19, refer to the checklist on the Coronavirus Information site on the Jacobs intranet.
   - If health screening (such as temperature screening) becomes necessary, follow the COVID-19 Working Onsite During a Pandemic guidance found on the Coronavirus Information site on the Jacobs intranet. The need and protocol for health screening will be based upon a risk assessment unless working under a client or municipality mandate and will be addressed in HSE Plans.

9) **COVID-19 Case Notification and Direction:** Ensure prompt notification of any confirmed or potential case from our staff or non-controlled subcontractor in order to ensure that the correct measures are taken in line with local government and company direction. Ensure there is a method for both our staff and subcontractors to promptly notify project management of any confirmed or potential case and then follow the process below to notify our regional management team of the incident:

   - The incident must be verbally reported immediately by your established Verbal Reporting Chain.
   - If the matter is triaged and the person is asked to self-isolate, advise HR.

For cases of confirmed or presumed positive COVID-19, the project or office team works with HR, HSE, and when necessary, Contracts, to determine the appropriate path forward for the person and project.

Due to the fact our staffing levels may be lower, pay extra care to personnel not authorized to be on site. Any security concerns should be reported immediately to Security, HSE, or management.

10) **Temporary Field Project Shutdown:** In the event a COVID-19 outbreak forces a temporary shutdown of a field project, PMs will work with the HSE Leads and Environmental Managers to conduct a risk assessment to determine site specific considerations and actions to take. Refer to Office Reduced Attendance Protocols on Jacobs Connect for considerations of reduced staffing of an office on the Jacobs intranet COVID-19 information Site.

11) **Considerations for Critical or Mission Essential Worker Isolation Protocols:** On April 8, 2020, the CDC published interim guidance for Implementing Safety Practices for Critical Infrastructure Workers Who May Have Had Exposure to a Person with Suspected or Confirmed COVID-19. This guidance outlines recommendations for returning critical infrastructure workers in the United States to the workplace after exposure to COVID-19 and modifies the CDC's earlier recommendation from a 14-day period of self-isolation to enable employers to determine the overall risks and allowing a return with additional protective measures in place.

    At this time, Jacobs will continue to require a 14-day self-isolation period for any employee who is exposed to a person who is positive or presumed to be positive for COVID-19. Contact your HR and HSE Leads for additional guidance.

2. COVID-19 Return to the Workplace Post Isolation Quarantine

This guidance provides a process to protect the rights and health of the returning employee, but also the health, including the mental health and wellbeing, of other employees, client employees, and Jacobs teammates.

The scope of this guideline encompasses any employee who wishes to return to the workplace after a period of isolation or quarantine due to precautionary measures, symptoms of COVID-19 (with diagnosis unconfirmed), or a presumptive positive or positive diagnosis of COVID-19.

Regardless of this guidance, the decision by an employee to discontinue home isolation after illness and return to the workplace should be made in consultation with their healthcare provider and based on guidance from state and/or local health departments. Local decisions depend on local circumstances.

Notification of Intent to Return to a Workplace

No employee is to return to a workplace after a period of isolation or quarantine if they or someone in their household has been ill with any of the following symptoms in the 14 days prior to the date of return:

- Fever
- Cough
- Shortness of breath

Where the employee, or someone in their household, has been ill, they are to notify their line manager or HR partner of their intent to return to a workplace, but cannot return until either assessed (see below) or have a clearance/written advice from a licensed medical practitioner. If an employee or anyone in their household was not ill, the employee may return to the workplace.

COVID-19 Return to Workplace Assessment

The employee's line manager or HR, with HSE support, are to identify if there are specific local health agency requirements regarding the discontinuance of isolation or additional transmission-based precautions. Where no local requirements are stipulated and the employee has not been provided written advice by a medical practitioner, Jacobs' guidance for assessing an employee to return to the workplace is based on the CDC's time-since-illness-onset and time-since-recovery strategy.

The employee's line manager or HR is to conduct an assessment with the employee who has indicated that themselves or someone in their household has been ill in the 14 days prior to the intended date of return. They will follow the assessment criteria located on the Coronavirus Information site on the Jacobs' intranet to determine when the employee may return to work.

General Requirements

Employees who have returned to the workplace post isolation/quarantine where neither themselves nor their household members were ill during the period, but they or a household member have later become ill are to notify their line manager, supervisor or HR as soon as possible.

Responsibility

All employees are responsible for complying with this guideline to ensure that we protect the health, safety, and wellness of the Jacobs workplace, this is at the core of our BeyondZero® Culture of Caring.

If you have any questions regarding this guideline, please contact the local HR office or the Global Security & Resilience team via email at Global.Security@jacobs.com. The Company will continue to monitor the latest WHO and other health authorities' bulletins for guidance and to update this guideline as appropriate. Within the U.S., requirements set forth by the Occupational Safety and Health Administration (OSHA) will apply. For Jacobs' international operations, compliance with country-specific health and safety regulations will apply. In

implementing the processes set forth herein, Jacobs will comply with applicable country specific local employment and labor laws.

Appendix A. CDC, What You Need to Know

COVID 19 CORONAVIRUS DISEASE

What you need to know about coronavirus disease 2019 (COVID-19)

What is coronavirus disease 2019 (COVID-19)?

Coronavirus disease 2019 (COVID-19) is a respiratory illness that can spread from person to person. The virus that causes COVID-19 is a novel coronavirus that was first identified during an investigation into an outbreak in Wuhan, China.

Can people in the U.S. get COVID-19?

Yes. COVID-19 is spreading from person to person in parts of the United States. Risk of infection with COVID-19 is higher for people who are close contacts of someone known to have COVID-19, for example healthcare workers, or household members. Other people at higher risk for infection are those who live in or have recently been in an area with ongoing spread of COVID-19. Learn more about places with ongoing spread at https://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html#geographic.

Have there been cases of COVID-19 in the U.S.?

Yes. The first case of COVID-19 in the United States was reported on January 21, 2020. The current count of cases of COVID-19 in the United States is available on CDC's webpage at https://www.cdc.gov/coronavirus/2019-ncov/cases-in-us.html.

How does COVID-19 spread?

The virus that causes COVID-19 probably emerged from an animal source, but is now spreading from person to person. The virus is thought to spread mainly between people who are in close contact with one another (within about 6 feet) through respiratory droplets produced when an infected person coughs or sneezes. It also may be possible that a person can get COVID-19 by touching a surface or object that has the virus on it and then touching their own mouth, nose, or possibly their eyes, but this is not thought to be the main way the virus spreads. Learn what is known about the spread of newly emerged coronaviruses at https://www.cdc.gov/coronavirus/2019-ncov/about/transmission.html.

What are the symptoms of COVID-19?

Patients with COVID-19 have had mild to severe respiratory illness with symptoms of

- fever
- cough
- shortness of breath

What are severe complications from this virus?

Some patients have pneumonia in both lungs, multi-organ failure and in some cases death.

How can I help protect myself?

People can help protect themselves from respiratory illness with everyday preventive actions.

- Avoid close contact with people who are sick.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Wash your hands often with soap and water for at least 20 seconds. Use an alcohol-based hand sanitizer that contains at least 60% alcohol if soap and water are not available.

If you are sick, to keep from spreading respiratory illness to others, you should

- Stay home when you are sick.
- Cover your cough or sneeze with a tissue, then throw the tissue in the trash.
- Clean and disinfect frequently touched objects and surfaces.

What should I do if I recently traveled from an area with ongoing spread of COVID-19?

If you have traveled from an affected area, there may be restrictions on your movements for up to 2 weeks. If you develop symptoms during that period (fever, cough, trouble breathing), seek medical advice. Call the office of your health care provider before you go, and tell them about your travel and your symptoms. They will give you instructions on how to get care without exposing other people to your illness. While sick, avoid contact with people, don't go out and delay any travel to reduce the possibility of spreading illness to others.

Is there a vaccine?

There is currently no vaccine to protect against COVID-19. The best way to prevent infection is to take everyday preventive actions, like avoiding close contact with people who are sick and washing your hands often.

Is there a treatment?

There is no specific antiviral treatment for COVID-19. People with COVID-19 can seek medical care to help relieve symptoms.

For more information: **www.cdc.gov/COVID19**

CS 314937-A 03/03/2020

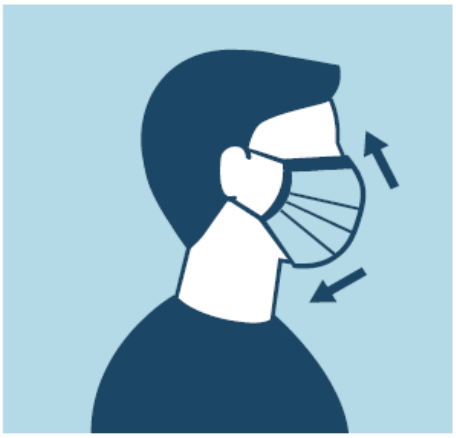
Appendix B. CDC DIY Cloth Face Coverings

Use of Cloth Face Coverings to Help Slow the Spread of COVID-19

How to Wear Cloth Face Coverings

Cloth face coverings should—

- fit snugly but comfortably against the side of the face
- be secured with ties or ear loops
- include multiple layers of fabric
- allow for breathing without restriction
- be able to be laundered and machine dried without damage or change to shape



CDC on Homemade Cloth Face Coverings

CDC recommends wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain (e.g., grocery stores and pharmacies), **especially** in areas of significant community-based transmission.

CDC also advises the use of simple cloth face coverings to slow the spread of the virus and help people who may have the virus and do not know it from transmitting it to others. Cloth face coverings fashioned from household items or made at home from common materials at low cost can be used as an additional, voluntary public health measure.

Cloth face coverings should not be placed on young children under age 2, anyone who has trouble breathing, or is unconscious, incapacitated or otherwise unable to remove the cloth face covering without assistance.

The cloth face coverings recommended are not surgical masks or N-95 respirators. Those are critical supplies that must continue to be reserved for healthcare workers and other medical first responders, as recommended by current CDC guidance.

Should cloth face coverings be washed or otherwise cleaned regularly? How regularly?

Yes. They should be routinely washed depending on the frequency of use.

How does one safely sterilize/clean a cloth face covering?

A washing machine should suffice in properly washing a cloth face covering.

How does one safely remove a used cloth face covering?

Individuals should be careful not to touch their eyes, nose, and mouth when removing their cloth face covering and wash hands immediately after removing.

CDC

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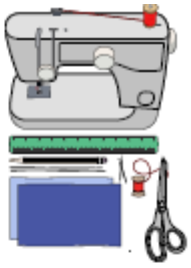
cdc.gov/coronavirus

Sewn Cloth Face Covering

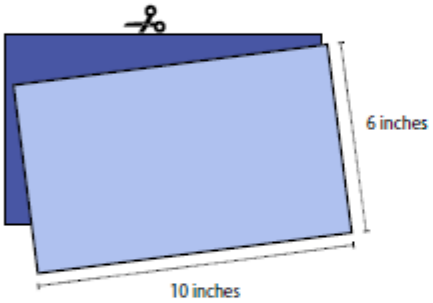


Materials

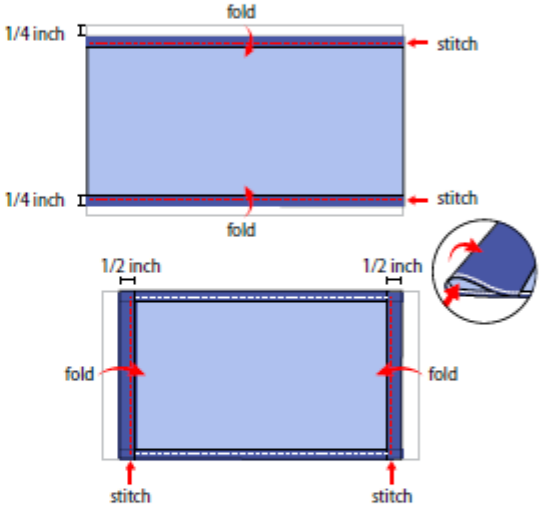
- Two 10"x6" rectangles of cotton fabric
- Two 6" pieces of elastic (or rubber bands, string, cloth strips, or hair ties)
- Needle and thread (or bobby pin)
- Scissors
- Sewing machine

Tutorial

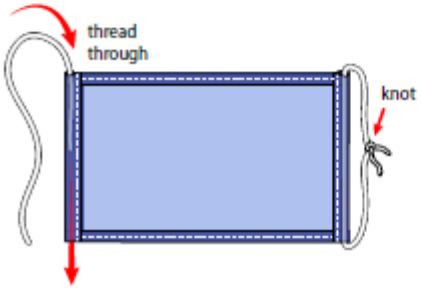
1. Cut out two 10-by-6-inch rectangles of cotton fabric. Use tightly woven cotton, such as quilting fabric or cotton sheets. T-shirt fabric will work in a pinch. Stack the two rectangles; you will sew the cloth face covering as if it was a single piece of fabric.



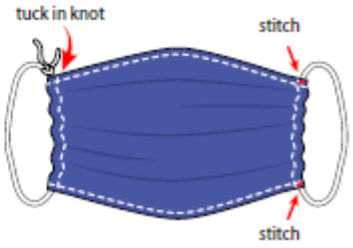
2. Fold over the long sides ¼ inch and hem. Then fold the double layer of fabric over ½ inch along the short sides and stitch down.



3. Run a 6-inch length of 1/8-inch wide elastic through the wider hem on each side of the cloth face covering. These will be the ear loops. Use a large needle or a bobby pin to thread it through. Tie the ends tight.
Don't have elastic? Use hair ties or elastic head bands. If you only have string, you can make the ties longer and tie the cloth face covering behind your head.



4. Gently pull on the elastic so that the knots are tucked inside the hem.
Gather the sides of the cloth face covering on the elastic and adjust so the cloth face covering fits your face. Then securely stitch the elastic in place to keep it from slipping.

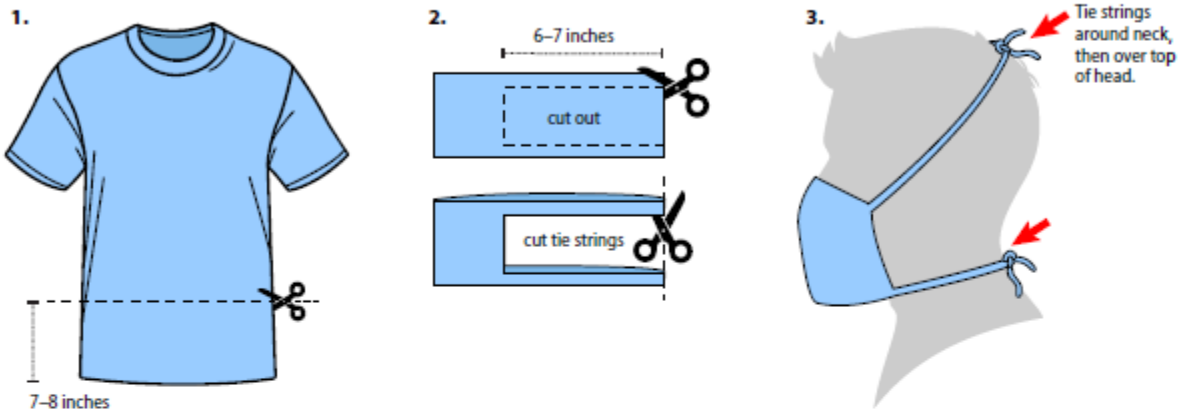


Quick Cut T-shirt Cloth Face Covering (no sew method)

Materials

- T-shirt
- Scissors

Tutorial

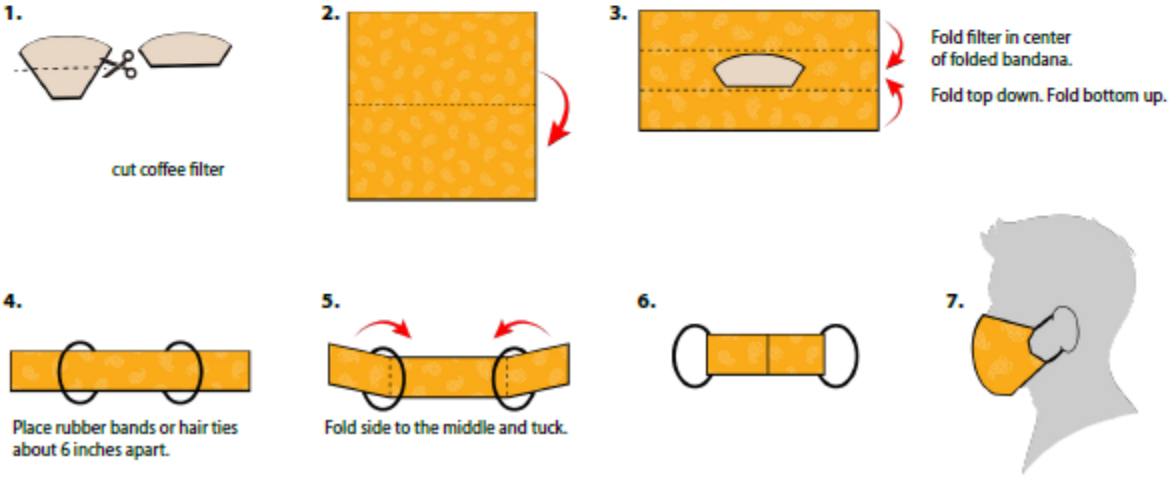


Bandana Cloth Face Covering (no sew method)

Materials

- Bandana (or square cotton cloth approximately 20"x20")
- Coffee filter
- Rubber bands (or hair ties)
- Scissors (if you are cutting your own cloth)

Tutorial



How to Safely Remove and Dispose of Face Coverings

Safely Removing Face Coverings

Wash your hands with soap and water or use hand sanitizer before touching the face covering. Avoid touching the front of the covering because it may be contaminated.

Only touch the ear loops, ties, or band. Follow the instructions below for the type of covering you are using.

- Covering with Ear Loops: Hold both ear loops and gently lift and remove.
- Covering with Ties: Untie the bottom bow then untie the top and pull the covering away from you as the ties are loosened.
- Covering with Bands: Lift the bottom strap over your head first then pull the top strap over your head.

Wash your hands with soap and running water or use hand sanitizer if soap and water is not available.

Safe Disposal

Disposable coverings must be thrown away immediately once removed.

- Reminder - Wash your hands with soap and water or use hand sanitizer before and after.
- Do not take off the face covering and place it on any surface.
- Refer to any local guidance for disposal location or instructions.
- Disposable coverings do not work well if they are damp, soiled, or damaged. Replace when this occurs.

Cloth face coverings (homemade or purchased) do not require disposal after use but following requirements must be followed:

- Reminder: Wash your hands with soap and water or use hand sanitizer before and after handling your cloth face covering.
- Do not take off the covering and place it on any surface.
- When removed in the work environment (such as needed to eat or drink), place the cloth face covering in a sealed plastic baggie upon removal from users' face.
- Face covering must be laundered with detergent at home each night
- Do not sanitize by microwave unless you are certain no metal clips were used when making the cloth face covering.

Attachment 5
Fact Sheets

Tick-Borne Pathogens — A Fact Sheet

Most of us have heard of Lyme disease or Rocky Mountain Spotted Fever (RMSF), but there are several notifiable tick-borne pathogens that present a significant field hazard. In some areas, these account for more than half of our serious field incidents. The following procedures should be applied during any field activity, even in places that are predominantly paved with bordering vegetation.

Hazard Recognition

An important step in controlling tick related hazards is understanding how to identify ticks, their habitats, their geographical locations, and signs and symptoms of tick-borne illnesses.

Tick Identification

There are five varieties of hard-bodied ticks that have been associated with tick-borne pathogens. These include:

- Deer (Black Legged) Tick (eastern and pacific varieties)
- Lone Star Tick
- Dog Tick
- Rocky Mountain Wood Tick

These varieties and their geographical locations are illustrated on the following page. See also the 'TickEncounter' Resource Center website for photos of each variety of tick including photos of larvae, nymph, adult male and female, and partially fed and fully fed females ticks. It also shows the geographic location, their activity cycle over the year, and what diseases they can carry.

Tick Habitat

In eastern states, ticks are associated with deciduous forest, grasslands, and habitat containing leaf litter. Leaf litter provides a moist cover from wind, snow, and other elements. In the north-central states, is generally found in heavily wooded areas often surrounded by broad tracts of land cleared for agriculture.

On the Pacific Coast, the bacteria are transmitted to humans by the western blacklegged (deer) tick and habitats are more diverse. For this region, ticks have been found in habitats with forest, north coastal scrub, high brush, and open grasslands. Coastal tick populations thrive in areas of high rainfall, but ticks are also found at inland locations.

Illnesses and Signs and Symptoms

There are several notifiable tick-borne pathogens that cause human illness in the United States. These pathogens may be transmitted during a tick bite—normally hours after attachment. The illnesses include:

- Lyme (bacteria)
- RMSF (bacteria)
- Colorado Tick Fever (virus)
- Powassan (virus)
- Ehrlichiosis (bacteria)
- STARI (Southern Tick-Associated Rash Illness) (bacteria)
- Tularemia (Rabbit Fever) (bacteria)
- Babesia (protozoan parasite)

Symptoms will vary based on the illness, and may develop in infected individuals typically between 3 and 30 days after transmission. Some infected individuals will not become ill or may develop only mild symptoms. These illnesses present with some or all the following signs & symptoms: fever, headache, muscle aches, stiff neck, joint aches, nausea, vomiting, abdominal pain, diarrhea, malaise, weakness, small solid, ring-like, or spotted rashes. The bite site may be red, swollen, or develop ulceration or lesions. For Lyme disease, the bite area will sometimes resemble a target pattern. A variety of long-term symptoms may result if the illness is left untreated, including debilitating effects and death.

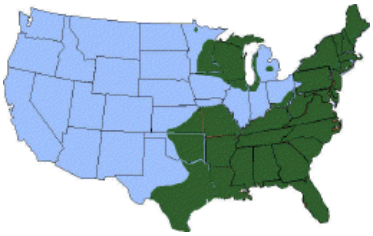
Deer Tick

From Left: adult female, adult male, nymph, and larvae Deer Tick (cm scale)

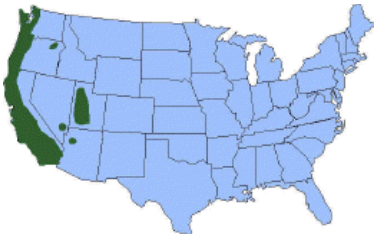
Lone Star Tick

Dog Tick

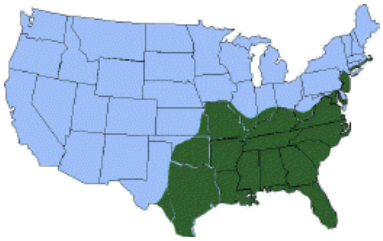
Rocky Mountain Wood Tick



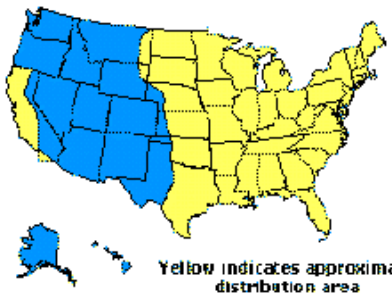
Distribution of Deer Tick (dark green)

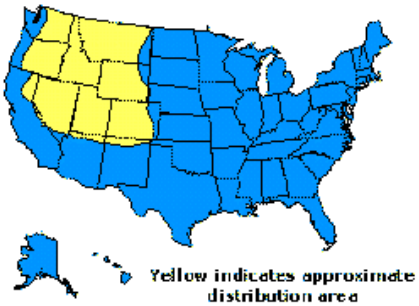


Distribution of Pacific Deer Tick (dark green)



Distribution of Lone Star Tick (Green)





Hazard Control

The methods for controlling exposure to ticks include, in order of most- to least-preferred:

- Avoiding tick habitats and ceasing operations in heavily infested areas
- Reducing tick abundance through habitat disruption or application of acracide
- Personal protection through use of repellants and protective clothing
- Frequent tick inspections and proper hygiene

Vaccinations are not available and preventative antibiotic treatment after a bite is generally not recommended.

Avoidance and Reduction of Ticks

To the extent practical, tick habitats should be avoided. In areas with significant tick infestation, consider stopping work and withdrawing from area until adequate tick population control can be achieved. Stopping and withdrawing should be considered as seriously as entering an area without proper energy control or with elevated airborne contaminants—tick-borne pathogens present risk of serious illness!

In areas where significant population density or infestation exists, tick reduction should be considered. Tick reduction can be achieved by disrupting tick habitats and/or direct population reduction using tick-toxic pesticides (Damminix, Dursban, Sevin, etc.).

Habitat disruption may include only simple vegetative reduction such as removing leaf litter and trimming grass and brush. Trim/clear walking paths and specific work locations or request facility mow areas prior to field work. Often, projects schedule subcontractors to assist with vegetation reduction tasks prior to field work. Tick populations can be reduced by between 72 and 100 percent when leaf litter alone is removed. In more heavily infested areas, habitat disruption may include grubbing, tree trimming or removal, and pesticide application (Damminix, Dursban, Sevin, etc.). This approach is practical in smaller, localized areas or perimeter areas that require occasional access. Habitat controls are to be implemented with appropriate health and safety controls, in compliance with applicable environmental requirements, and may be best left to the property owner or tenant or to a licensed pesticide vendor. Caution should be exercised when using chemical repellents or pesticides in or around areas where environmental or industrial media samples will be collected for analysis.

Personal Protection

After other prevention and controls are implemented, personal protection is still necessary to control exposure to ticks. Personal protection must include all of the following steps:

- So that ticks may be easily seen, wear light-colored clothing. Full-body New Tyvek (paper-like disposable coveralls) may also be used.
- To prevent ticks from getting underneath clothing tuck pant legs into socks or tape to boots and/or use tick gaiters (available through the warehouses). Tuck shirt into pants.
- Wear long-sleeved shirts, a hat, and high boots. Carry a tick removal kit (available through the warehouses).
- Apply DEET or Picradin repellent to exposed skin or clothing per product label. CDC recommended natural repellents may be used on a case-by-case basis for project staff sensitive to DEET or Picradin. Repellant is required when walking in vegetated areas with potential tick habitat.
- Apply permethrin repellent to the outside of boots, clothing and cloth field equipment (e.g., backpacks, snake chaps) before wearing, per product label. Consult this video, SDS, Frequently Asked Questions and label instructions for information on one of the available permethrin products that includes how to properly treat clothing and gear. Reapply Permethrin spray per the instructions (typically every six washings or six weeks). Insect Shield clothing is an alternative to spray Permethrin, and lasts up to sixty

washes. Permethrin treated or Insect Shield clothing is required when walking in vegetated areas with potential tick habitat.

- Carry a lint roller. Frequently check for ticks and remove from clothing. Use lint roller, especially in the areas you cannot see (back, back of the legs), the white roller body of the lint roller makes it much easier to identify and remove the very small ticks.
- At the end of the day, search your entire body for ticks (particularly groin, armpits, neck, and head) and shower.
- To prevent pathogen transmission through mucous membranes or broken/cut skin, wash or disinfect hands and/or wear surgical-style nitrile gloves any time ticks are handled.

Pregnant individuals and individuals using prescription medications should consult with their physician and/or pharmacists before using chemical repellents. Because human health effects may not be fully known, use of chemical repellents should be kept to a minimum frequency and quantity. Always follow manufacturers' use instructions and precautions. Wash hands after handling, applying, or removing protective gear and clothing. Avoid situations such as hand-to-face contact, eating, drinking, and smoking when applying or using repellents. Remove and wash clothes per repellent product label.

Vaccinations are generally not available for tick-borne pathogens. Although production of the LYMErix Lyme disease vaccination has been ceased, vaccination may still be considered under specific circumstances and with concurrence from the consulting physician.

In summary, if vegetation removal or insecticide to eliminate ticks is not feasible, the requirements are broken down into "**the three I's": Insecticide** (apply permethrin on clothing, DEET/repellant on skin), **Isolation** (wear long pants/sleeves, taping/tucking) and **Inspection** (frequent lint roller and visual checks, before entering vehicle checks, end of day check). You need all three I's to successfully protect yourself from ticks.

Tick Check

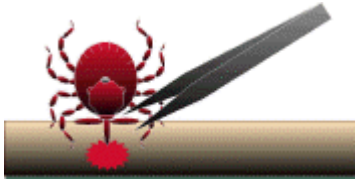
Perform a tick check after field survey and each time before entering the field vehicle (you do not want to infest your field vehicle with ticks). Use a lint roller to check your clothes, small ticks are much easier to see on the white lint roller body, or if you don't have a lint roller, have your field partner check your back; the backs of your legs, arms, and neck; and your hairline. Shake off clothing as thorough as possible before entering the vehicle. Once the field day is complete, repeat this procedure and perform a thorough self-check. Notify the RHSM, PM, and you supervisor if ticks are found on clothing and alert the entire field crew.

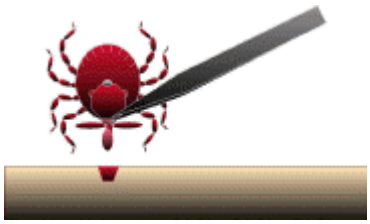
If a tick has embedded itself into the skin, remove the tick as described below and notify the RHSM, PM and your supervisor.

Tick Removal

1. Use a tick removal kit (obtained through one of the Jacobs warehouses), or a fine-tipped tweezers or shield your fingers with a tissue, paper towel, or nitrile gloves.

2. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. If this happens, remove mouthparts with tweezers. Notify the PM, RHSM, and your supervisor if a tick bite is experienced.





3. Avoid squeezing, crushing or puncturing the body of the tick because its fluids (saliva, hemolymph, gut contents) may contain infectious organisms. Releasing these organisms to the outside of the tick's body or into the bite area may increase the chance of infectious organism transmission.

4. Do not handle the tick with bare hands because infectious agents may enter through mucous membranes or breaks in the skin. This precaution is particularly directed to individuals who remove ticks from domestic animals with unprotected fingers. Children, elderly persons, and immunocompromised persons may be at greater risk of infection and should avoid this procedure.

5. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.

6. Should you wish to save the tick for identification, place it in a plastic bag, with the date of the tick bite, and place in your freezer. It may be used at a later date to assist a physician with making an accurate diagnosis (if you become ill).

Note: Folklore remedies such as petroleum jelly or hot matches do little to encourage a tick to detach from skin. In fact, they may make matters worse by irritating the tick and stimulating it to release additional saliva, increasing the chances of transmitting the pathogen. These methods of tick removal should be avoided. In addition, many tick removal devices have been marketed, but none are better than a plain set of fine-tipped tweezers.

First Aid and Medical Treatment

Tick bites should always be treated with first aid. Clean and wash hands and disinfect the bite site after removing embedded tick. Individuals previously infected with Lyme disease does not confer immunity—re-infection from future tick bites can occur even after a person has contracted a tick-borne disease.

If you experience a tick bite, be sure to:

- ✓ **Notify your supervisor, PM, and RHSM**
- ✓ **Call WorkCare (U.S. including, Puerto Rico, Hawaii and AK) at 1-888-449-7787**

  For all other locations:
  - Canada, contact your supervisor and your HS&E representative and call the Nurse Triage number at 1-877-424-5256
  - For International, contact your supervisor, HS&E representative and Human Resources
  - HKA (contingent) workers use the WorkCare number above

Jacobs

US & CANADA
VEHICLE ACCIDENT REPORTING & INTAKE FORM

VEHICLE ACCIDENT INSTRUCTIONS (US & Canada)

Jacobs Owned or Leased Vehicle Damage only:

You are not required to submit the Vehicle Incident Report to Risk Management for incidents involving ONLY damage to Jacobs personnel or property. (Example: owned/leased/rental vehicles where single vehicle runs off road). In these instances:

- Notify your supervisor, HSE representative and Fleet Management (JacobsUSAFleet@Jacobs.com)
- If our employee is injured, follow procedures for reporting a workers' compensation claim
- If you have questions, contact your Risk Management representative.

Vehicle Damage or Injury to Members of the Public:

- Complete and submit the attached Vehicle Intake Form
- If necessary, move vehicles to a safe location and wait for police.
- Aid the Injured - Do not move injured individuals unless absolutely necessary. Warn other drivers.
- Call the Police – Give exact location and advise if medical help is needed.
- Don't Comment – Do not make/sign any statement concerning who was at fault. Give out only information required by authorities.
- Notification – Report the accident to your Department Manager, your HSE Representative and Global Risk Management.
- Serious accidents and accidents with injuries: Report as soon as possible, immediately following the accident. Do not wait for a copy of the police report to notify Global Risk Management of the incident.
- Accidents without injuries: Report within twenty-four (24) hours of the accident.
- Vehicle Accident Report – The Jacobs Vehicle Accident Report must be completed and sent to your HSE Representative and AutoClaims@Jacobs.com

Rental Car Incidents:

- For incidents involving a rental car that was rented through BCD Travel or Concur Travel for approved work business, you must file an auto claim directly with the rental car company.
- For incidents involving Rental Vehicles with injuries to Members of the Public, complete and submit the attached Intake Form to Global Risk Management.

Questions

Contact: Zane Wilson (Zane.Wilson@Jacobs.com), Global Risk Management Department
Phone: 214 583-8417
Email: AutoClaims@Jacobs.com

Jacobs

US & CANADA
VEHICLE ACCIDENT REPORTING & INTAKE FORM

Email Completed form to: AutoClaims@Jacobs.com For Questions Contact: 214 583-8417

Location Code: _____

Company/Subsidiary Name: _____

Line of Business: People & Places Solutions ☐ Critical Mission Solutions ☐ Corporate Functions ☐

Incident Location

Date of Accident: _____ Time of Accident: ☐ a.m. ☐ p.m.

Location of Accident: Client Facility/Project Site ☐ Highway ☐ Other (specify) ☐ _____

Address: _____

Nearest Intersection: City _____ State _____

Company Vehicle Information

Company Vehicle Driver: _____ Driver Date of Birth: _____

Office/Project Assigned to: _____

Name of Passenger(s): _____

Work Address: _____

Home Address: _____ Home/Cell Phone: _____

Supervisor Name: _____ Supervisor Phone: _____

Vehicle Owner: _____ Company Owned ☐ Leased ☐ Rental ☐ Personal ☐

If rental vehicle, name of agency: _____

If rental, reservation through: BCD Travel ☐ Concur ☐ Rental Desk ☐

If leased vehicle, name of agency: _____

Vehicle Number: _____ Make & Model: _____

Vehicle License Number: _____ Vehicle ID Number _____

Has Driver Completed Jacobs Recognized Driver Training: Yes ☐ No ☐ Unknown ☐

Other Driver(s) Information

Other Driver(s) Name: _____

Home Address: _____

Phone Number: Home/Cell: _____ Work: _____

Vehicle Owner: _____ Relation to Driver: _____

Vehicle Make & Model _____

Insurance Company _____

Insurance Agent: _____ Agent Phone Number: _____

Policy Number: _____

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US & CANADA
VEHICLE ACCIDENT REPORTING & INTAKE FORM

Incident Description

Contact with: Other Vehicle(s) ☐ Fixed Object ☐ Pedestrian ☐ Other ☐

Details: _____

_____

_____

_____

_____

Witnesses: _____

Citations Issued: Jacobs Driver: Yes ☐ No ☐ Other Driver: Yes ☐ No ☐

Police Contacted: Yes ☐ No ☐ Agency: _____

Officer name/badge: _____

Injuries

Jacobs Employee Yes ☐ No ☐ Other Driver/Passengers: Yes ☐ No ☐

If yes, describe _____

Other Driver/Passengers: Yes ☐ No ☐

If yes, describe _____

Vehicle Damages

Company Vehicle: _____

Location of Company Vehicle _____

Other Vehicle Damage: _____

Location of Other Vehicle: _____

Property Damage (Do not include vehicle damages listed above)

Property Owner: _____

Describe Damages: _____

Contact info for Owner: _____

Comments: _____

_____

_____

_____

_____

_____

Jacobs

US & CANADA
VEHICLE ACCIDENT REPORTING & INTAKE FORM

Diagram of Incident (attach additional documents if needed):

Report Submitted by: _____ Date: _____

Reporter's Email Address: _____ Phone: _____

Working Alone Protocol

Call-In Contact Form

Date of site work:_____ Expected start time:_____
Name of Jacobs employee in the field:_____
Name of Jacobs employee responsible to receive contact: _____
Client Emergency Contact (if any): _____
Jacobs employee's contact numbers:
Radio #_____
Cell Phone #_____
Address and Location of work:_____
Directions/Map:

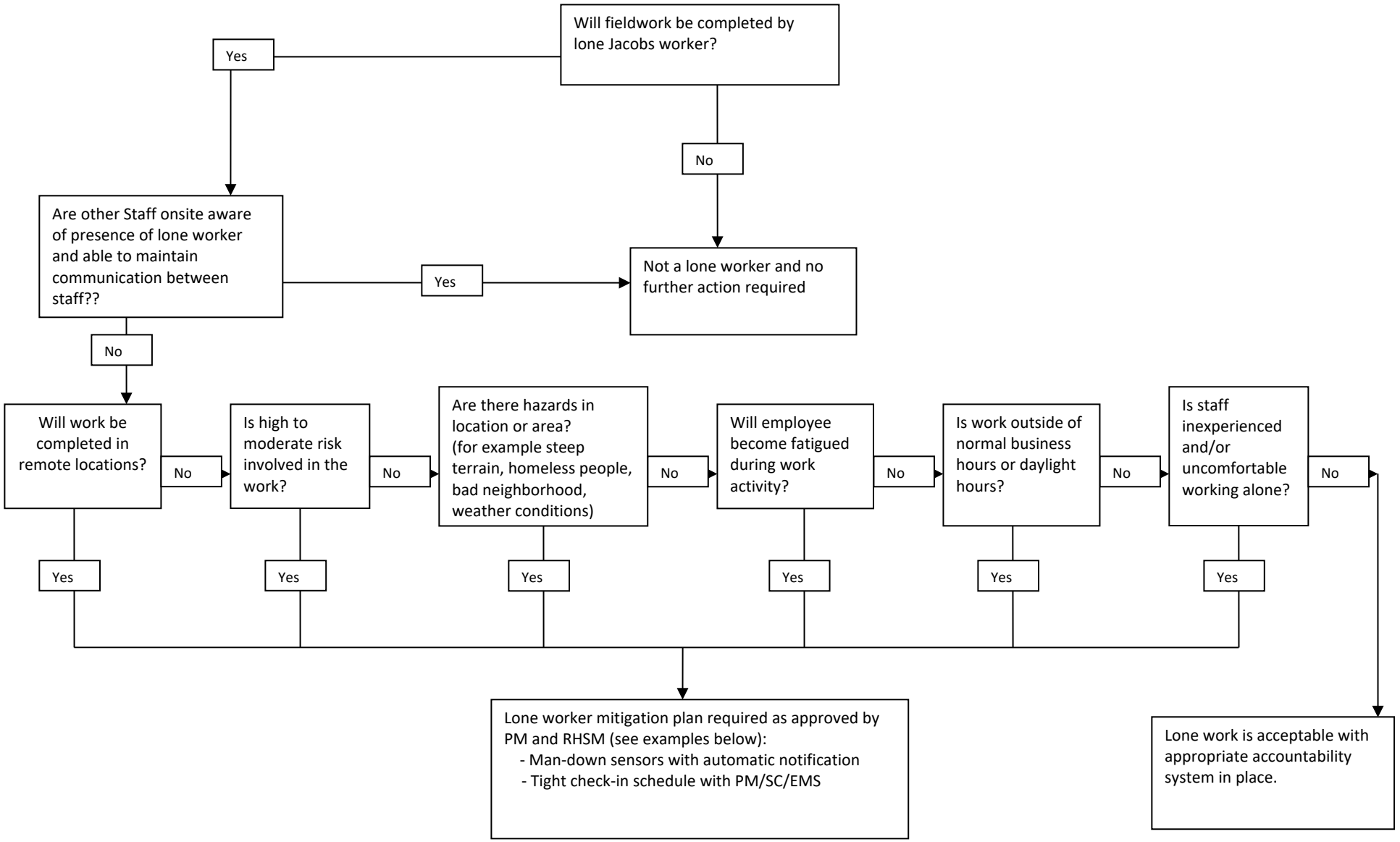
Planned Activity:_____
Specified Frequency and time for call-in:_____

Time	Verified	Location

If lone worker fails to call in at specified frequency/time:

1. Call worker's radio and cell to determine if an emergency exists.
2. If no reply, immediately call client security/emergency service if there is one at the site.
3. If there is no client security, call Emergency Services (911). Inform the dispatcher there is a lone worker that cannot be contacted and there may be an emergency onsite. Provide the lone worker's name, their last known location, and your contact information.
4. After Emergency Services have been contacted, call the other emergency contacts, PM, and RHSM.

Lone Worker Protocol



TARGET ZERO BULLETIN

Subject: HSSE Agency Inspections (OSHA, EPA, Department of Transportation, State Health Department)

Do you know what YOU would do if an agency inspector arrived at your site unannounced?

Recently, a State OSHA inspector made an unannounced visit to one of our federal project sites. OSHA, EPA, and authorized state or local agencies have authority to inspect any facility that is subject to health, safety, and environmental legislation. Inspections may be announced or unannounced. This particular inspector indicated that the project was targeted for an inspection because the work was funded by the American Recovery and Reinvestment.

Enterprise SOP HS&E-201, *Agency Inspections and Communications,* describes the responsibilities, procedures, and requirements associated with inspections conducted by external regulatory agencies, as well as the methods for communicating information to key individuals. This Target Zero Bulletin is a brief summary of what to do in the event of an agency inspection at your site. Refer to the SOP for more specific guidance.

Notification of Inspections

- If the inspection is an announced regulatory agency inspection, the PM should notify the RHSM and Responsible Environmental Manager (REM) well in advance of the inspection.
- If an unannounced agency inspector visits one of our projects, Field personnel must immediately notify the project Emergency Response Coordinator (ERC). Typically the ERC is the Safety Coordinator (SC).
- The ERC must immediately notify the RHSM/REM, as appropriate, of unannounced inspections, or designate someone to call the RHSM/REM. The RHSM/REMs can provide guidance to the field staff and PM.

Inspector Credential Verification

- Upon arrival, the ERC must request the inspector to provide official credentials. Record the inspector's name and office phone number or obtain the inspector's business card.
- The inspector shall sign the visitors log and be given a site-specific health, safety, and environmental protection briefing.
- The inspector shall meet any site access requirements associated with security clearances, specialized training, and medical monitoring. The Jacobs representative shall verify that the inspector possesses these requirements; access will only be granted to those areas where appropriate access requirements are met. Some inspectors have the authority to gain access to any work area at any time, such as an inspector with a search warrant. In these cases, we can stop work operations as necessary to protect the safety of the inspector(s).

Opening Conference

- The Jacobs PM, ERC, RHSM, or REM, and the inspector shall determine attendees for the opening conference. The RHSM (for OSHA and other worker health and safety inspections) or REM (for environmental inspections) shall join the opening conference via conference call.
- The inspector shall inform Jacobs of the purpose of the inspection and provide a copy of the complaint, if applicable.
- The inspector shall outline the scope of the inspection, including employee interviews conducted in private, physical inspection of the workplace and records, possible referrals, discrimination complaints, and the closing conference(s).

Requests for OSHA Logs

- An OSHA inspector may request to review the project OSHA Injury/Illness log, better known as the OSHA 300 Log. Contact your RHSM for assistance in obtaining the OSHA 300 Log.
- Field projects with a continuous duration of 1 year or longer are considered to be separate establishments and are required to maintain an OSHA 300 log specific to the project. The project OSHA 300 log should be maintained onsite and kept current.
- Recordable injuries and illnesses sustained on field projects less than one year in duration are maintained on the Jacobs office log where the injured employee is based.

The Inspection

- The scope of the inspection shall be limited to that indicated by the inspector in the opening conference. The inspector shall be escorted to relevant areas only. The ERC or other designated by the RHSM or REM must accompany the inspector during the inspection.
- Ensure that the inspection is limited to the scope that the inspector disclosed during the opening conference. The ERC should always take notes, which identify areas inspected, machinery or equipment and materials examined, employees or other persons interviewed, and photographs taken by the inspector.
- The inspector will observe safety, health, and environmental conditions and practices and document the inspection process. The inspector may also take photos and instrument readings, examine records, collect air samples, measure noise levels, survey existing engineering controls, and monitor employee exposure to toxic vapors, gases, and dusts.
- Jacobs should gather duplicate information (photographs, readings, samples) in the same manner and condition as the inspector. If the equipment needed to take duplicate samples is not onsite, ask the inspector if the sampling can wait until the equipment is available. If samples are taken, request a description of the tests that the agency intends to perform on the samples and request results as soon as they are available.
- Employees may be questioned during the inspection tour. The employee can refuse to speak to an inspector, can speak to the inspector with a company representative (including management) present, or can speak to the inspector privately. It is Jacobs policy that employees who wish to speak to the inspector are not discriminated against, intimidated, or otherwise mistreated for exercising their rights during compliance inspections.
- Copies of documents should not be provided to the inspector without the approval of the RHSM or REM or Legal Insurance Department. **DO NOT** voluntarily release documents. Respond only to inspection team requests.
- During the course of the inspection, the inspector may point out violations. For each violation, the Jacobs representative should ask the inspector to discuss possible corrective action. Where possible, violations detected by the inspector should be corrected immediately and noted by the inspector as corrected.
- For those items which cannot be corrected immediately, an action plan shall be formulated for timely correction. In any instance, employees exposed to hazards shall be removed from the area.

Closing Conference

After the inspection, a closing conference is normally held as follows:

- The Jacobs PM, ERC, RHSM or REM shall be involved via conference call in the closing conference, at a minimum.
- The inspector shall describe the apparent violations found during the inspection and other pertinent issues as deemed necessary by the inspector. Jacobs shall be advised of their rights to participate in any subsequent conferences, meetings or discussions. Any unusual circumstances noted during the closing conference shall be documented by the ERC.
- The inspector shall discuss violations observed during the inspection and indicate for which violations a citation and a proposed penalty may be issued or recommended.
- The ERC shall request receipts for all samples and approved documents photocopied by the inspector, request a photocopy of the inspector's photograph log, and request a copy of the final inspection report.
- Any documentation from an agency inspection must be transmitted immediately to the RHSM or REM, and LID.

Unannounced regulatory agency inspections may happen at any time on our projects
Get your RHSM/REM and PM involved immediately if an Inspector arrives.

Attachment 6
Safety Data Sheets

Safety Data Sheet

Effective date: 11 May 2020 **Revision**: 11 May 2020
Trade Name: Alconox®

1 Identification of the substance/mixture and of the supplier

1.1 Product identifier

Trade Name: Alconox®
Product number: 1101, 1103, 1104, 1104-1, 1112, 1112-1, 1125, 1150

1.2 Application of the substance / the mixture: Cleaning material/Detergent

1.2.1 Recommended dilution ratio: 1 – 2% in water

1.3 Details of the supplier of the Safety Data Sheet

Manufacturer:
Alconox Inc.
30 Glenn St
White Plains, NY 10603
(914) 948-4040

Supplier:

Emergency telephone number:
ChemTel Inc
North America: 1-888-255-3924
International: +1 813-248-0573

2 Hazards identification

2.1 Classification of the substance or mixture:

In compliance with EC regulation No. 1272, 29CFR1910/1200 and GHS requirements.

Hazard-determining components of labeling:
Tetrasodium Pyrophosphate
Sodium tripolyphosphate
Sodium Alkylbenzene Sulfonate

2.2 Label elements:

Eye damage, category 1.

Skin irritation, category 2.

Product at recommended dilution:
Eye irritation, category 2B

Hazard pictograms:

Signal word: Danger

Hazard statements:
H315 Causes skin irritation.
H318 Causes serious eye damage.

Precautionary statements:
P264 Wash skin thoroughly after handling.

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Trade Name: Alconox®

P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Hazardous Elements at Use Dilution:

Hazard Pictograms:

Signal Word: Warning
Hazard Statements:
H320 Causes eye irritation

Precautionary statements:
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P501 Dispose of contents and container as instructed in Section 13

Additional information: None.

Hazard description
Hazards Not Otherwise Classified (HNOC): May cause surfaces to become slippery if wet. Use caution in areas of foot traffic if on floors.

Information concerning particular hazards for humans and environment:
The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

Classification system:
The classification is according to EC regulation No. 1272, 29CFR1910/1200 and GHS Requirements, and extended by company and literature data. The classification is in accordance with the latest editions of international substances lists and is supplemented by information from technical literature and by information provided by the company.

3 Composition/information on ingredients

3.1 Chemical characterization: Not determined or not available.

3.2 Description: None
3.3 Hazardous components (percentages by weight)

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Skin Irrit. 2; H315 Eye Irrit. 2; H319	12-28
CAS number: 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Acute Tox. 4; H303 Skin Irrit. 2; H315 Eye Dam. 1; H318	8-22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Skin Irrit. 2; H315 Eye Irrit. 2; H319	2-16

Safety Data Sheet

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Trade Name: Alconox®

Hazardous components at use dilution (percentages by weight):

Identification	Chemical Name	Classification	Wt. %
CAS number: 7758-29-4	Sodium tripolyphosphate	Eye Irrit. 2; H319	0.12 - 0.28
CAS number: 68081-81-2 or 68411-30-3	Sodium Alkylbenzene Sulfonate	Eye Irrit. 2; H319	0.08 – 0.22
CAS number: 7722-88-5	Tetrasodium Pyrophosphate	Eye Irrit. 2; H319	0.02 – 0.16

3.4 Additional Information: None.

4 First aid measures

4.1 Description of first aid measures

General information: None.

After inhalation:

Maintain an unobstructed airway.
Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.
Seek medical attention if symptoms develop or persist.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.
Remove contact lens(es) if able to do so during rinsing.
Seek medical attention if irritation persists or if concerned.

After swallowing:

Rinse mouth thoroughly.
Seek medical attention if irritation, discomfort, or vomiting persists.

4.2 Most important symptoms and effects, both acute and delayed

None

4.3 Indication of any immediate medical attention and special treatment needed:

No additional information.

First aid measure at recommended dilution:

General information: None.

After inhalation:

Maintain an unobstructed airway.
Loosen clothing as necessary and position individual in a comfortable position.

After skin contact:

Wash affected area with soap and water.

After eye contact:

Rinse/flush exposed eye(s) gently using water for 15-20 minutes.
Remove contact lens(es) if able to do so during rinsing.

After swallowing:

Rinse mouth thoroughly. Seek medical attention if irritation, discomfort, or vomiting develops.

5 Firefighting measures

Safety Data Sheet

5.1 Extinguishing media

Suitable extinguishing agents:

Use appropriate fire suppression agents for adjacent combustible materials or sources of ignition.

For safety reasons unsuitable extinguishing agents: None

5.2 Special hazards arising from the substance or mixture:

Thermal decomposition can lead to release of irritating gases and vapors.

5.3 Advice for firefighters

Protective equipment:

Wear protective eye wear, gloves and clothing.
Refer to Section 8.

5.4 Additional information:

Avoid inhaling gases, fumes, dust, mist, vapor and aerosols.
Avoid contact with skin, eyes and clothing.

6 Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation.
Ensure air handling systems are operational.

6.2 Environmental precautions:

Should not be released into the environment.
Prevent from reaching drains, sewer or waterway.

6.3 Methods and material for containment and cleaning up:

Wear protective eye wear, gloves and clothing.

6.4 Reference to other sections: None

7 Handling and storage

7.1 Precautions for safe handling:

No expected hazards under normal use condition.

Avoid breathing mist or vapor if aerosolized.
Do not eat, drink, smoke or use personal products when handling chemical substances.

7.2 Conditions for safe storage, including any incompatibilities:

Store in a cool, well-ventilated area.

7.3 Specific end use(s):

No additional information.

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Trade Name: Alconox®

8 Exposure controls/personal protection

8.1 Control parameters:

a) 7722-88-5, Tetrasodium Pyrophosphate, ACGIH TWA 10 mg/m3
b) 7758-29-4, Sodium Tripolyphosphate, ACGIH TWA 10 mg/m3
c) Dusts, non-specific OEL, Irish Code of Practice
   (i) Total inhalable 10 mg/m3 (8hr)
   (ii) Respirable 4 mg/m3 (8hr)
   (iii) Tetrasodium Pyrophosphate, OSHA TWA 5 mg/m3, (8hr)

8.2 Exposure controls

Appropriate engineering controls:

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling.

Respiratory protection:

Not needed under normal use conditions.

Protection of skin:

Select glove material impermeable and resistant to the substance.

Eye protection:

Safety goggles or glasses, or appropriate eye protection. Recommended to comply with ANSI Z87.1 and/or EN 166.

General hygienic measures:

Wash hands before breaks and at the end of work.
Avoid contact with skin, eyes and clothing.

Exposure Control and Personal Protective Equipment at recommended dilution:

Under normal use and operational conditions, no special personal protective equipment or engineering controls will be necessary. Handle with care.

9 Physical and chemical properties

Appearance (physical state, color):	White and cream colored flakes - powder	**Explosion limit lower**: **Explosion limit upper**:	Not determined or notavailable. Not determined or notavailable.
Odor:	Not determined or not available.	**Vapor pressure at 20°C**:	Not determined or notavailable.
Odor threshold:	Not determined or not available.	**Vapor density**:	Not determined or notavailable.
pH-value:	9.5 (1% aqueous solution)	**Relative density**:	Not determined or notavailable.

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Melting/Freezing point:	Not determined or not available.	**Solubilities**:	Not determined or notavailable.
Boiling point/Boiling range:	Not determined or not available.	**Partition coefficient (n-octanol/water)**:	Not determined or notavailable.
Flash point (closed cup):	Not determined or not available.	**Auto/Self-ignition temperature**:	Not determined or notavailable.
Evaporation rate:	Not determined or not available.	**Decomposition temperature**:	Not determined or notavailable.

Flammability (solid, gaseous):	Not determined or not available.	**Viscosity**:	a. Kinematic: Not determined or not available. b. Dynamic: Not determined or not available.
Density at 20°C:	Not determined or not available.		

10 Stability and reactivity

10.1 Reactivity: Not determined or not available.
10.2 Chemical stability: Not determined or not available.
10.3 Possibility hazardous reactions: Not determined or not available.
10.4 Conditions to avoid: Not determined or not available.
10.5 Incompatible materials: Not determined or not available.
10.6 Hazardous decomposition products: Not determined or not available.

11 Toxicological information

11.1 Information on toxicological effects:

Acute Toxicity:

Oral:

: LD50 > 5000 mg/kg oral rat - Product.

Chronic Toxicity: No additional information.

Skin corrosion/irritation:

Sodium Alkylbenzene Sulfonate: Causes skin irritation.

Serious eye damage/irritation:

Sodium Alkylbenzene Sulfonate: Causes serious eye damage.

Tetrasodium Pyrophosphate: Risk of serious damage to eyes.

Product information at recommended dilution:

Eye irritation may occur upon direct contact with eyes. No specific hazards for skin contact, inhalation, or chronic exposure are expected within normal use parameters.

Respiratory or skin sensitization: No additional information.

Carcinogenicity: No additional information.

IARC (International Agency for Research on Cancer): None of the ingredients are listed.

NTP (National Toxicology Program): None of the ingredients are listed.

Germ cell mutagenicity: No additional information.

Reproductive toxicity: No additional information.

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STOT-single and repeated exposure: No additional information.

Additional toxicological information: No additional information.

12 Ecological information

12.1 Toxicity:

Sodium Alkylbenzene Sulfonate: Fish, LC50 1.67 mg/l, 96 hours.
Sodium Alkylbenzene Sulfonate: Aquatic invertebrates, EC50 Daphnia 2.9 mg/l, 48 hours.
Sodium Alkylbenzene Sulfonate: Aquatic Plants, EC50 Algae 29 mg/l, 96 hours.
Tetrasodium Pyrophosphate: Fish, LC50 - other fish - 1,380 mg/l - 96 h.
Tetrasodium Pyrophosphate: Aquatic invertebrates, EC50 - Daphnia magna (Water flea) - 391 mg/l - 48 h.

12.2 Persistence and degradability: No additional information.

12.3 Bioaccumulative potential: No additional information.

12.4 Mobility in soil: No additional information.

General notes: No additional information.

12.5 Results of PBT and vPvB assessment:

PBT: No additional information.

vPvB: No additional information.

12.6 Other adverse effects: No additional information.

13 Disposal considerations

13.1 Waste treatment methods (consult local, regional and national authorities for proper disposal)

Relevant Information:

It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities. (US 40CFR262.11).

14 Transport information

14.1 UN Number: ADR, ADN, DOT, IMDG, IATA	None
14.2 UN Proper shipping name: ADR, ADN, DOT, IMDG, IATA	None
14.3 Transport hazard classes: ADR, ADN, DOT, IMDG, IATA	**Class:** None **Label:** None **LTD. QTY:** None

US DOT

Limited Quantity Exception: None

Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

Non Bulk:
RQ (if applicable): None
Proper shipping Name: None
Hazard Class: None
Packing Group: None
Marine Pollutant (if applicable): No additional information.

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	Comments: None	**Comments:** None
14.4	**Packing group:** ADR, ADN, DOT, IMDG, IATA	None
14.5	**Environmental hazards**:	None
14.6	**Special precautions for user:**	None
	Danger code (Kemler):	None
	EMS number:	None
	Segregation groups:	None

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

14.8 Transport/Additional information:

Transport category:	None
Tunnel restriction code:	None
UN "Model Regulation":	None

15 Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.

North American

SARA

Section 313 (specific toxic chemical listings): None of the ingredients are listed.
Section 302 (extremely hazardous substances): None of the ingredients are listed.

CERCLA (Comprehensive Environmental Response, Clean up and Liability Act) Reportable

Spill Quantity: None of the ingredients are listed.

TSCA (Toxic Substances Control Act):

Inventory: All ingredients are listed as active.
Rules and Orders: Not applicable.

Proposition 65 (California):

Chemicals known to cause cancer: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for females: None of the ingredients are listed.

Chemicals known to cause reproductive toxicity for males: None of the ingredients are listed.

Chemicals known to cause developmental toxicity: None of the ingredients are listed.

Canadian

Canadian Domestic Substances List (DSL):
All ingredients are listed.

EU

REACH Article 57 (SVHC): None of the ingredients are listed.

Germany MAK: Not classified.
EC 648/2004 – This is an industrial detergent. Contains >30% phosphate, 15-30% anionic surfactant, <5% EDTA salts
EC 551/2009 – This is not a laundry or dishwasher detergent
EC 907/2006 – Contains no enzymes, optical brighteners, perfumes, allergenic fragrances, or preservative agents

Asia Pacific

Australia

Australian Inventory of Chemical Substances (AICS): All ingredients are listed.

China

Inventory of Existing Chemical Substances in China (IECSC): All ingredients are listed.

Japan

Inventory of Existing and New Chemical Substances (ENCS): All ingredients are listed.

Korea

Existing Chemicals List (ECL): All ingredients are listed.

New Zealand

New Zealand Inventory of Chemicals (NZOIC): All ingredients are listed.

Philippines

Philippine Inventory of Chemicals and Chemical Substances (PICCS): All ingredients are listed.

Taiwan

Taiwan Chemical Substance Inventory (TSCI): All ingredients are listed.

16 Other information

Abbreviations and Acronyms: None

Summary of Phrases

Hazard statements:
H315 Causes skin irritation.
H318 Causes serious eye damage.

NFPA: 1-0-0
HMIS: 1-0-0

At recommended dilution:
NFPA: 1-0-0
HMIS: 1-0-0

Precautionary statements:
P264 Wash skin thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P302+P352 If on skin: Wash with soap and water.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P321 Specific treatment (see supplemental first aid instructions on this label).
P332+P313 If skin irritation occurs: Get medical advice/attention.
P362 Take off contaminated clothing and wash before reuse.
P501 Dispose of contents and container as instructed in Section 13.

Manufacturer Statement:

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Sulfuric Acid, 2.0N (1.0M)

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 10/10/2013 Revision date: 05/08/2018 Supersedes: 10/10/2013 Version: 1.1

SECTION 1: Identification

1.1. Identification

Product form : Mixtures

Product name : Sulfuric Acid, 2.0N (1.0M)

Product code : LC25790

1.2. Recommended use and restrictions on use

Use of the substance/mixture : For laboratory and manufacturing use only.

Recommended use : Laboratory chemicals

Restrictions on use : Not for food, drug or household use

1.3. Supplier

LabChem Inc
Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
Zelienople, PA 16063 - USA
T 412-826-5230 - F 724-473-0647
info@labchem.com - www.labchem.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 or +1-703-741-5970

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin corrosion/irritation Category 1B	H314	Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS05

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H314 - Causes severe skin burns and eye damage

Precautionary statements (GHS-US) : P260 - Do not breathe mist, vapors, spray.
P264 - Wash exposed skin thoroughly after handling.
P280 - Wear protective gloves, protective clothing, eye protection, face protection.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a poison center or doctor/physician.
P363 - Wash contaminated clothing before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to comply with local, state and federal regulations
If inhaled: Remove person to fresh air and keep comfortable for breathing

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS-US classification
Water	(CAS-No.) 7732-18-5	90.75	Not classified
Sulfuric Acid	(CAS-No.) 7664-93-9	9.25	Skin Corr. 1A, H314 Eye Dam. 1, H318

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a poison center or doctor/physician.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : Causes severe skin burns and eye damage.

Symptoms/effects after eye contact : Causes serious eye damage.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Reactivity : Thermal decomposition generates : Corrosive vapors.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : Safety glasses. Gloves. Protective clothing. Head/neck protection.

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. Do not breathe mist, vapors, spray. Avoid contact during pregnancy/while nursing.

Hygiene measures : Wash exposed skin thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Comply with applicable regulations.

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : incompatible materials. Keep container closed when not in use.

Incompatible products : Strong bases. metals. cyanides.

Incompatible materials : Heat sources.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Sulfuric Acid (7664-93-9)		
ACGIH	ACGIH TWA (mg/m³)	0.2 mg/m³ (Thoracic fraction)
OSHA	OSHA PEL (TWA) (mg/m³)	1 mg/m³
IDLH	US IDLH (mg/m³)	15 mg/m³
NIOSH	NIOSH REL (TWA) (mg/m³)	1 mg/m³

Water (7732-18-5)
Not applicable

8.2. Appropriate engineering controls

Appropriate engineering controls : Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Chemical resistant apron. Face shield. Gloves. Protective clothing. Safety glasses.

Hand protection:

Wear protective gloves.

Eye protection:

Chemical goggles or face shield

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Wear appropriate mask

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

Appearance	:	Clear, colorless liquid.
Color	:	Colorless
Odor	:	None.
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	Non flammable.
Vapor pressure	:	No data available
Relative vapor density at 20 °C	:	No data available
Relative density	:	No data available
Specific gravity / density	:	1.06 g/ml
Solubility	:	Soluble in water.
Log Pow	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	1.14 cSt
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
Explosive properties	:	Not applicable.
Oxidizing properties	:	None.

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Thermal decomposition generates : Corrosive vapors.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Reacts violently with (some) bases: release of heat.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

metals. Strong bases. cyanides.

10.6. Hazardous decomposition products

Sulfur compounds. Thermal decomposition generates : Corrosive vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure	:	Skin and eye contact
Acute toxicity	:	Not classified

Sulfuric Acid (7664-93-9)	
LD50 oral rat	2140 mg/kg body weight (Rat, Experimental value)
ATE US (oral)	2140 mg/kg body weight

Water (7732-18-5)	
LD50 oral rat	≥ 90000 mg/kg

Water (7732-18-5)	
ATE US (oral)	90000 mg/kg body weight

Skin corrosion/irritation : Causes severe skin burns and eye damage.
Serious eye damage/irritation : Causes serious eye damage.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Sulfuric Acid (7664-93-9)	
Additional information	Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans
National Toxicology Program (NTP) Status	2 - Known Human Carcinogens

Reproductive toxicity : Not classified
Specific target organ toxicity – single exposure : Not classified
Specific target organ toxicity – repeated exposure : Not classified
Aspiration hazard : Not classified
Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.
Symptoms/effects after eye contact : Causes serious eye damage.

SECTION 12: Ecological information

12.1. Toxicity

Sulfuric Acid (7664-93-9)	
LC50 fish 1	42 mg/l (96 h, Gambusia affinis)
EC50 Daphnia 1	29 mg/l (24 h, Daphnia magna)

12.2. Persistence and degradability

Sulfuric Acid, 2.0N (1.0M)	
Persistence and degradability	Not established.

Sulfuric Acid (7664-93-9)	
Persistence and degradability	Biodegradability: not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

Water (7732-18-5)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Sulfuric Acid, 2.0N (1.0M)	
Bioaccumulative potential	Not established.

Sulfuric Acid (7664-93-9)	
Log Pow	-2.2 (Estimated value)
Bioaccumulative potential	Not bioaccumulative.

Water (7732-18-5)	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with local, state and federal regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN2796 Sulfuric acid (with not more than 51% acid), 8, II

UN-No.(DOT) : UN2796

Proper Shipping Name (DOT) : Sulfuric acid
with not more than 51% acid

Transport hazard class(es) (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Packing group (DOT) : II - Medium Danger

Hazard labels (DOT) : 8 - Corrosive

DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 242

DOT Special Provisions (49 CFR 172.102) : A3 - For combination packaging, if glass inner packaging (including ampoules) are used, they must be packed with absorbent material in tightly closed metal receptacles before packing in outer packaging.
A7 - Steel packaging must be corrosion-resistant or have protection against corrosion.
B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized.
B15 - Packaging must be protected with non-metallic linings impervious to the lading or have a suitable corrosion allowance.
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
N6 - Battery fluid packaged with electric storage batteries, wet or dry, must conform to the packaging provisions of 173.159 (g) or (h) of this subchapter.
N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material.
T8 - 4 178.274(d)(2) Normal..... Prohibited
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.
TP12 - This material is considered highly corrosive to steel.

DOT Packaging Exceptions (49 CFR 173.xxx) : 154

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L

DOT Vessel Stowage Location : B - (i) The material may be stowed ‘‘on deck’’ or ‘‘under deck’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) ‘‘On deck only’’ on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

Other information : No supplementary information available.

SECTION 15: Regulatory information

15.1. US Federal regulations

Sulfuric Acid, 2.0N (1.0M)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Sulfuric Acid	CAS-No. 7664-93-9	9.25%

Sulfuric Acid (7664-93-9)	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	1000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	1000 lb
SARA Section 311/312 Hazard Classes	Health hazard - Skin corrosion or Irritation Health hazard - Serious eye damage or eye irritation

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

National regulations

Sulfuric Acid (7664-93-9)
Listed on IARC (International Agency for Research on Cancer) Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Revision date : 05/08/2018

Other information : None.

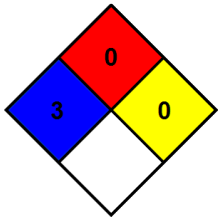
Full text of H-phrases: see section 16:

H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

NFPA health hazard : 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating		
Health	:	3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
Flammability	:	0 Minimal Hazard - Materials that will not burn
Physical	:	0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
Personal protection	:	H H - Splash goggles, Gloves, Synthetic apron, Vapor respirator

SDS US LabChem

Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.

Nitric Acid, 1.0N (1.0M)

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 10/31/2013 Revision date: 01/10/2018 Supersedes: 12/19/2016 Version: 1.2

SECTION 1: Identification

1.1. Identification

Product form : Mixtures

Product name : Nitric Acid, 1.0N (1.0M)

Product code : LC17840

1.2. Recommended use and restrictions on use

Use of the substance/mixture : For laboratory and manufacturing use only.

Recommended use : Laboratory chemicals

Restrictions on use : Not for food, drug or household use

1.3. Supplier

LabChem Inc
Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
Zelienople, PA 16063 - USA
T 412-826-5230 - F 724-473-0647
info@labchem.com - www.labchem.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 or 011-703-527-3887

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Corrosive to metals Category 1	H290	May be corrosive to metals
Skin corrosion/irritation Category 1B	H314	Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1	H318	Causes serious eye damage

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS05

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage

Precautionary statements (GHS-US) : P234 - Keep only in original container
P260 - Do not breathe mist, vapors, spray
P264 - Wash exposed skin thoroughly after handling
P280 - Wear protective gloves, protective clothing, eye protection, face protection
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a poison center or doctor/physician
P363 - Wash contaminated clothing before reuse
P390 - Absorb spillage to prevent material damage
P405 - Store locked up
P406 - Store in corrosive resistant container with a resistant inner liner
P501 - Dispose of contents/container to comply with local, state and federal regulations

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS-US classification
Water	(CAS-No.) 7732-18-5	93.9	Not classified
Nitric Acid, 70% w/w	(CAS-No.) 7697-37-2	6.1	Ox. Liq. 3, H272 Met. Corr. 1, H290 Skin Corr. 1A, H314 Eye Dam. 1, H318

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation : Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a poison center or doctor/physician.

First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor/physician.

First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : Causes severe skin burns and eye damage.

Symptoms/effects after eye contact : Causes serious eye damage.

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.

Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Reactivity : Thermal decomposition generates : Corrosive vapors.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : Protective goggles. Protective clothing. Gloves. Combined gas/dust mask with filter type B/P3.

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.

Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials. Absorb spillage to prevent material damage.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed : May be corrosive to metals.

Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. Do not breathe mist, vapors, spray.

Hygiene measures : Wash exposed skin thoroughly after handling. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures : Comply with applicable regulations.

Storage conditions : Keep only in the original container in a cool, well ventilated place away from : incompatible materials. Keep container closed when not in use.

Incompatible products : Strong bases. Halogens. metals. aluminum. Strong reducing agents.

Incompatible materials : Sources of ignition. Direct sunlight.

Packaging materials : Store in a corrosion resistant container with a resistant inner liner.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Nitric Acid, 70% w/w (7697-37-2)		
ACGIH	ACGIH TWA (ppm)	2 ppm (Nitric acid; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
ACGIH	ACGIH STEL (ppm)	4 ppm (Nitric acid; USA; Short time value; TLV - Adopted Value)
OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³
OSHA	OSHA PEL (TWA) (ppm)	2 ppm
IDLH	US IDLH (ppm)	25 ppm
NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³
NIOSH	NIOSH REL (TWA) (ppm)	2 ppm
NIOSH	NIOSH REL (STEL) (mg/m³)	10 mg/m³
NIOSH	NIOSH REL (STEL) (ppm)	4 ppm

Water (7732-18-5)
Not applicable

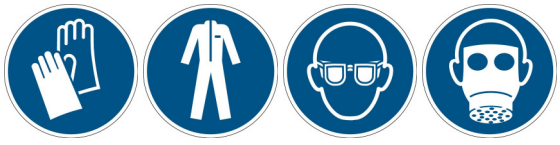
8.2. Appropriate engineering controls

Appropriate engineering controls : Emergency eye wash fountains should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Gloves. Protective clothing. Protective goggles. Chemical resistant apron. Gas mask.



Hand protection:

Wear protective gloves

Eye protection:

Chemical goggles or face shield

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Wear appropriate mask

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Colorless to pale yellow liquid.
Color	:	Colourless to light yellow
Odor	:	characteristic Pungent
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	Non flammable.
Vapor pressure	:	No data available
Relative vapor density at 20 °C	:	No data available
Relative density	:	No data available
Specific gravity / density	:	1.03 g/ml
Solubility	:	Soluble in water.
Log Pow	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	0.99 cSt
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Thermal decomposition generates : Corrosive vapors.

10.2. Chemical stability

Not established.

10.3. Possibility of hazardous reactions

Not established.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

Strong reducing agents. Strong bases. metals. aluminum. Ammonia. combustible materials. Halogens.

10.6. Hazardous decomposition products

Nitrogen oxides. Thermal decomposition generates : Corrosive vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Skin and eye contact; Inhalation

Acute toxicity : Not classified

Water (7732-18-5)	
LD50 oral rat	≥ 90000 mg/kg
ATE US (oral)	90000 mg/kg body weight

Skin corrosion/irritation : Causes severe skin burns and eye damage.

Serious eye damage/irritation : Causes serious eye damage.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

Symptoms/effects after eye contact : Causes serious eye damage.

SECTION 12: Ecological information

12.1. Toxicity

Nitric Acid, 70% w/w (7697-37-2)	
EC50 Daphnia 1	180 mg/l (EC50; 48 h)
LC50 fish 2	72 ppm (LC50; 96 h)
Threshold limit algae 1	> 19 mg/l (EC0)

12.2. Persistence and degradability

Nitric Acid, 1.0N (1.0M)	
Persistence and degradability	Not established.

Nitric Acid, 70% w/w (7697-37-2)	
Persistence and degradability	Biodegradability: not applicable. No test data on mobility of the components available.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

Water (7732-18-5)	
Persistence and degradability	Not established.

12.3. Bioaccumulative potential

Nitric Acid, 1.0N (1.0M)	
Bioaccumulative potential	Not established.

Nitric Acid, 70% w/w (7697-37-2)	
BCF fish 1	<= 1 (BCF)
Log Pow	-2.3 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method)
Bioaccumulative potential	Bioaccumulation: not applicable.

Water (7732-18-5)	
Bioaccumulative potential	Not established.

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.

GWPmix comment : No known effects from this product.

Other information : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with local, state and federal regulations.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN2031 Nitric acid other than (red fuming, with not more than 20 percent nitric acid), 8, II

UN-No.(DOT) : UN2031

Proper Shipping Name (DOT) : Nitric acid other than
red fuming, with not more than 20 percent nitric acid

Transport hazard class(es) (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Packing group (DOT) : II - Medium Danger

Hazard labels (DOT) : 8 - Corrosive

DOT Packaging Non Bulk (49 CFR 173.xxx) : 158

DOT Packaging Bulk (49 CFR 173.xxx) : 242

DOT Special Provisions (49 CFR 172.102) : A6 - For combination packaging, if plastic inner packaging are used, they must be packed in tightly closed metal receptacles before packing in outer packaging.
B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized.
B47 - Each tank may have a reclosing pressure relief device having a start-to-discharge pressure setting of 310 kPa (45 psig).
B53 - Packaging must be made of either aluminum or steel.
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
T8 - 4 178.274(d)(2) Normal..... Prohibited
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.
TP12 - This material is considered highly corrosive to steel.

DOT Packaging Exceptions (49 CFR 173.xxx)	:	None
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	:	1 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	:	30 L
DOT Vessel Stowage Location	:	D - The material must be stowed ‘‘on deck only’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.
Other information	:	No supplementary information available.

SECTION 15: Regulatory information

15.1. US Federal regulations

Nitric Acid, 1.0N (1.0M)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Nitric Acid, 70% w/w	CAS-No. 7697-37-2	6.1%

Nitric Acid, 70% w/w (7697-37-2)	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	1000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	1000 lb
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

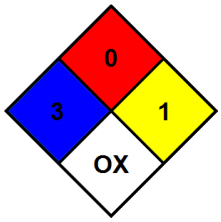
SECTION 16: Other information

Revision date	:	01/10/2018
Other information	:	None.

Full text of H-phrases: see section 16:

H272	May intensify fire; oxidizer
H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

NFPA health hazard	:	3 - Materials that, under emergency conditions, can cause serious or permanent injury.
NFPA fire hazard	:	0 - Materials that will not burn under typical dire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.
NFPA reactivity	:	1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.
NFPA specific hazard	:	OX - Materials that posses oxidizing properties.



Hazard Rating

Health	:	3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
Flammability	:	0 Minimal Hazard - Materials that will not burn
Physical	:	1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.
Personal protection	:	H H - Splash goggles, Gloves, Synthetic apron, Vapor respirator

SDS US LabChem

Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.

Attachment 7
Chemical-Specific Training Form

Chemical-Specific Training Form

Refer to SOP HS&E-107 Attachment 1 for instructions on completing this form.

Location:	Project # :
Safety Coordinator (SC):	Trainer:

TRAINING PARTICIPANTS:

NAME	SIGNATURE	NAME	SIGNATURE

REGULATED PRODUCTS/TASKS COVERED BY THIS TRAINING:

The SC shall use the product SDS to provide the following information concerning each of the products listed above.

☐ Physical and health hazards

☐ Control measures that can be used to provide protection (including appropriate work practices, emergency procedures, and PPE to be used)

☐ Methods and observations used to detect the presence or release of the regulated product in the workplace (including periodic monitoring, continuous monitoring devices, visual appearance or odor of regulated product when being released, etc.)

Training participants shall have the opportunity to ask questions concerning these products and, upon completion of this training, will understand the product hazards and appropriate control measures available for their protection.

Copies of SDSs, chemical inventories, and Jacobs written HazCom program shall be made available for employee review in the facility/project HazCom file.

Attachment 8
Project Activity Self-Assessment Checklists/Permits/Forms

Heat Stress Physiological Monitoring Form

Project:	
Date:	Company:

1. Take and record measurement of temperature or pulse at the frequency indicated in the safety plan.
2. Follow the Physiological Monitoring Protocol in the safety plan.
3. Never continue work if your body temperature is more than 100.4° F/38° C, or if you are experiencing sudden and severe fatigue, nausea, dizziness, or lightheadedness.

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

Employee:

Describe action taken below if measurements are exceeded:

Time								
Temp								
Pulse								

Pre-task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project:_____ Location: _____ Date:_____

Supervisor: _____ Job: _____

Activity:_____

_____

Attendees: Print Name Sign Name

_____

_____

_____

_____

_____

_____

_____

List Tasks and verify that applicable AHAs have been reviewed:

_____

_____

_____

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

_____

_____

Potential Health and Safety Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	__ Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
__ Thermal burns	__ Pinch points	__ Poisonous plants/insects
__ Electrical	__ Cuts/abrasions	__ Eye hazards/flying projectile
__ Weather conditions	__ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	__ Heat/cold stress
__ Noise	__ Elevated loads	__ Water/drowning hazard
__ Explosion/fire	__ Slips, trip and falls	__ Heavy equipment
__ Radiation	__ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__Underground Utilities	__ Security	__ Poor communications

Other Potential Hazards (Describe):

_____

_____

_____

Hazard Control Measures (Check All That Apply):			
PPE __ Thermal/lined __ Eye __ Dermal/hand __ Hearing __ Respiratory __ Reflective vests __ Flotation device __ Hard Hat __ Safety-Toed Boots	Protective Systems __ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections __ Entry Permits/notification	Fire Protection __ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	Electrical __ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected __ Overhead line clearance __ Underground utilities ID'd
Fall Protection __ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	Air Monitoring __ Photoionization detector / flame ionization detector __ Detector tubes __ Radiation __ Personnel sampling __ Lower explosive limit /oxygen __ No visible dust __ Other	Proper Equipment __ Aerial lift/ladders/scaffolds __ Forklift/heavy equipment __ Backup alarms __ Hand/power tools __ Crane with current inspection __ Proper rigging __ Operator qualified	Welding & Cutting __ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in confined space entry __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry __ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	Medical/ER __ First aid kit __ Eye wash __ First aid-CPR trained personnel __ Route to hospital	Heat/Cold Stress __ Work/rest regime __ Rest area __ Liquids available __ Monitoring __ Training	Vehicle/Traffic __ Traffic control __ Barricades __ Flags __ Signs
Permits __ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	Demolition __ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	Inspections: __ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __ Drill rigs/geoprobe rigs __ Cranes and rigging __ Utilities marked	Training: __ Hazwaste (current) __ Construction __ Competent person __ Task-specific __ First aid/CPR __ Confined Space __ HazCom
Underground Utilities __Dig alert called __Third-Party locater __As-builts reviewed __Interview site staff __Client review __soft locate necessary?	Incident Communications __Work stops until cleared by TM/CM __Immediate calls to TM/CM __Client notification __24 hour notification setup __Clear communications	AHA' s __reviewed and approved by HSM __onsite and current __applicable for this day's work __Communication and incident processes included?	
Field Notes (including observations from prior day, etc.): _____ _____ _____			

Name (Print): _____

Signature:_____ Date:_____

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StepBack

What are the hazards?
What is the risk?
What can we do about it?

StepBack Risk Questions	YES	NO
Is there enough time to complete the task safely and are people focused (not fatigued, distracted)?		
Is the right person(s) completing the task? (experience/training)		
Are adequate support and resources available?		
Are the correct tools, equipment, and PPE in place and are they in good operating condition?		
Are control measures in place to protect people/the environment (barriers, lockout/tagout, adjacent activities)?		
Have environmental issues (waste, hazardous materials, stormwater) been identified and mitigated?		
Are there safe access and egress to and from the work area?		
Are emergency planning/response measures adequate, including spills/releases?		
Are conditions the same since the task was last assessed?		
Is there a pre-task plan developed and approved for the task?		
If you answer '**NO**' to any of the above, **STOP** work, and contact your HSM or EM.		

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SAFETY OBSERVATION REPORT

Project Observation Information					
Project Name:			**Project Manager:**		
Project #:			**Health & Safety Mgr.:**		
Office Observation Information					
Office:					
Observation Information					
Observer Name:		**Company:**		**Date & Time:**	
Position/Title of worker observed:		**Company:**			
Observation Type:	☐ Safe Behavior ☐ Safe Condition ☐ Unsafe Behavior ☐ Unsafe Condition ☐ Opportunity for Improvement ☐ Other (specify):				
Work or Task Observed:					
Describe Observation:					
Type of incident prevented?					
WPS (*see table below):	☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5				
Remedial Action Taken?	☐ Not Applicable ☐ No ☐ Yes (describe):				
Further Action Needed?	☐ No Action ☐ Outstanding Action ☐ Urgent Action (describe action needed):				

***For any incident with a WPS greater than 3, or when further action is necessary, notify your HSM/EM and PM/Supervisor as soon as possible.**

Worst Potential Severity Table

WPS	Injury -Illness	Environment	Property Damage
5	Fatality or total permanent disability	Serious offsite impact, significant remediation required	USD$> 3 million
4	Partial disability; life changing; intensive care	Significant offsite impact, some remediation required	USD$ 300K-3 million
3	Urgent treatment, surgery	Release significantly above reportable limit of some local impact	USD$ 30K-300K
2	Medical treatment to prevent deterioration	Release above reportable limit or minor impact	USD$ 3K-30k
1	Simple, immediate treatment	Small release contained onsite and no impact	USD$ less than 3K

Incident Report Hardcopy (Phase 1 – Initial Entry)

Phase 1 – Initial Entry

Type of Incident (May select more than one)

- ☐ Injury/Illness
- ☐ Property Damage
- ☐ Spill/Release
- ☐ Environment/Permit
- ☐ Near-Miss
- ☐ Other

General Information Section

Preparer's Name: _____ Preparer's Phone Number: _____

Date of Incident: _____ **Time of Incident**: _____ AM / PM

What Business Unit is accountable for this incident:

_____

What Performance Unit is accountable for this incident:

_____

What Jacobs Company is accountable for this incident:

_____

Where did the Incident occur?

- ☐ United States, Geographic Region: _____
- ☐ Canada, Province/Territory: _____
- ☐ International, County: _____

Location of Incident?

- ☐ Company Premises, Jacobs Office (use three letter office code if available):

_____

- ☐ Project, Project name:

_____

- ☐ In Transit
  - Traveling from: _____
  - Traveling to: _____
- ☐ At Home
- ☐ Other, Specify:

_____

Describe the incident:

_____

Describe how this event could have been prevented:

_____

Provide Witness Information:

Name: _____Phone: _____

Name: _____Phone: _____

Name: _____Phone: _____

Personnel Notified of Incident (Provide name, date and time):

Jacobs Personnel:

_____

Client Personnel:

_____

Additional Comments:

_____

Injury/Illness Section [Complete only if Injury/Illness Incident type selected]

Who was injured?

- ☐ Jacobs Employee or Jacobs Temp Employee
- ☐ Subcontractor to Jacobs (Non-LLC Joint Venture Project)
- ☐ LLC Joint Venture Partner Employee
- ☐ LLC Joint Venture Project Subcontractor/Contractor
- ☐ Other

Name of Injured: _____ **Job Title:** _____

Employer Name: _____ **Supervisor of Employee:** _____

Complete for Jacobs Employee Injuries

Business Group of Injured Employee:

_____

Has the employee called the WorkCare (888-449-7787)?

☐ Yes ☐ No ☐ Not Sure

Has the injured employee's supervisor been notified of this incident?

☐ Yes ☐ No ☐ Not Sure

Complete for Non-Jacobs Employee Injuries

Has the project safety coordinator (SC) been notified of this incident?

☐ Yes ☐ No ☐ Not Sure

Project SC: _____

Body Part Affected: _____

Injury/Illness (Result):

_____

Describe treatment provided (if medication provided, identify whether over-the-counter or prescription):

_____

Describe any work restriction prescribed (include dates and number of days):

_____

Physician/Health Care Provider Information

Name: _____ Phone: _____

Was treatment provided away from the worksite?

☐ No

☐ Yes

Facility Name:

_____

Address:

_____

City: _____ Phone Number: _____

Was injured treated in an emergency room?

☐ No ☐ Yes

Was injured hospitalized overnight as an in-patient?

☐ No ☐ Yes

General Information Environmental Section [Complete only if Environment/Permit or Spill/Release Incident type selected]

Who had control of the area during the incident?

☐ Jacobs, Company:

_____

☐ Subcontractor, Company:

_____

☐ Joint Venture Partner/Contractor/Subcontractor, Company:

_____

☐ Other, Company:

_____

Relationship to Jacobs: _____

Property Damage Section [Complete only if Property Damage Incident type selected]

Property Damaged: _____

Property Owner: _____

Damage Description: _____

Estimated US Dollar Amount:

_____

Spill or Release Section [Complete only if Spill/Release Incident type selected]

Substance:_____

Estimated Quantity: _____

Did the spill/release move off the property?

_____

Spill/Release From: _____

Spill/Release To: _____

Environment/Permit Section [Complete only if Environment/Permit Incident type selected]

Describe Environmental or Permit Issue:

_____

Permit Type: _____

Permitted Level or Criteria (for example, discharge limit):

_____

Permit Name and Number (for example, National Pollutant Discharge Elimination System No. ST1234):

_____

Substance and Estimated Quantity: _____

Duration of Permit Exceedance: _____

Management Health, Safety, Security and Environment Inspection

Program/Project Name: _____ **Work Being Performed:** _____

Management Inspector: _____ **Project Number:** _____

Date: _____ **Sector:** _____

1. Job Information/Postings	**A**	**C**	**I**	**N/A**	**Comments/Corrective Action(s)**
a. Required postings in place (OSHA/State/Country)					
b. Emergency Contacts and Phone list posted					
c. Directions and map to hospital posted					
d. Incident Reporting Flow Chart posted					
2. HSSE Documentation					
a. Health and Safety Plan (HSP) current (within 1 year), onsite, and signed					
b. AHAs available for all work and reviewed/signed					
c. Daily PTSP/Meeting completed					
d. Safety Behavior Observation s completed weekly and emailed					
e. Self-Assessment checklists completed per HSP					
f. Environmental Plan available					
g. Emergency drill completed and documented					
h. E Permit compliance assurance measures documented					
i. HS&E training up to date and documented					
3. Housekeeping/First Aid					
a. Work areas clean and organized					
b. Fire extinguisher, eye wash, first aid/bloodborne pathogen kit in place					
c. Materials and waste labeled and in closed containers					
4. PPE and Air Monitoring					
a. PPE being worn as specified in HSP/AHA					
b. Air monitoring done per HSP and documented					
5. Heavy Equipment and Construction Operations					
a. Documentation of Competent/Qualified Operators					
b. Backup alarms audible and no cell phone use					
c. High-visibility vests on ground personnel					
d. Daily inspections completed and documented					
e. Windshields/mirrors OK and seat belts worn					
6. Excavation, Trenching, and Land Disturbing Activities					
a. Competent person identified					
b. Daily inspection completed prior to entry					
c. Proper setup (sloping, shoring, exits, spoils)					
d. Third-party Utility Locate service used					
d. Stormwater Pollution Prevention Plan and inspections/sampling conducted					
d. Erosion/sediment controls and dust controls in place					
7. Hand Tools					
a. Hand tools inspected prior to use					
b. Guards in place on tools					
c. Right tool for the job at hand					
8. Electrical					
a. All electrical cords, prongs, receptacles OK					
b. GFCI used on all circuits					
c. No energized electrical work incl. voltage testing					
d. Written Lockout Tagout system in use					

(Column: A = Adequate, C = Needs Consideration, I = Needs Immediate Action, N/A = Not Applicable or Not Assessed)

9. Ladders and Scaffolds	A	C	I	N/A	Comments/Corrective Action(s)
a. Ladders extend 36 feet above the landing and secured					
b. Ladders selected and used properly					
c. Scaffold planked, unaltered, and in good condition					
d. Scaffold/ladder users trained in inspection and use					
10. Hot Work					
a. Gas cylinders stored upright and secured					
b. Minimum 20' distance between fuels and oxygen					
c. PPE in use per HASP/AHA					
d. Fire watch in place w/adequate fire extinguishers					
11. Cranes					
a. Outriggers extended; swing radius protected					
b. Operator Certification of Crane Operators licensed, competent person for rigging					
c. Annual certified crane inspection					
d. Chains and slings inspected, have rating tag					
e. Suspended load tag lines—no one underneath					
12. Drill Rigs					
a. Overhead electrical clearance adequate					
b. Daily inspections completed and available					
c. Emergency shut off functioning					
d. Third-party Utility Locate service used					
13. HazCom and Chemical Use					
a. Material Safety Data Sheets present for all chemicals					
b. Chemical Inventory current and in site-specific health plan or on file					
c. HazCom briefing for all chemicals					
d. All chemicals labeled/stored as required					
e. Spill Prevention, Control, and Countermeasures Plan implemented for >1320 gals fuels/oils on site					
14. Fall Protection					
a. Full-body harness worn properly; workers tied off over 6 feet					
b. Guard rails 42 inches high					
15. Material Handling					
a. Proper body positioning					
b. Objects less than 40 lbs. for one person lift					
16. Site Control					
a. Work Zones delineated, necessary signage in place					
b. Decontamination method is adequate					
17. Waste and Hazardous Materials Management					
a. Waste Tracking Log					
b. Hazardous waste onsite for less than 90 days					
c. Containers labeled; inspections conducted/documented					
d. HW manifests signed, tracked, copies kept on site					
e. HW Transporters trained and licensed, placards used					
18. Security and Emergency Planning					
a. Emergency coordinator designated					
b. Severe weather plans/controls in place					
c. Security plan/measures adequate					
19. Demolition					
a. Asbestos-Containing Materials and Hazardous Materials Survey					
b. Asbestos/Lead based paint work approved per policy					

(Column: A = Adequate, C = Needs Consideration, I = Needs Immediate Action, N/A = Not Applicable or Not Assessed)

Attachment 9
Completed Jacobs AHAs

Activity Hazard Analysis

ACTIVITY/WORK TASK:	**Mobilization and Site Walk**				AHA #	**1**	
Project Location:	SMCB	Overall Risk Assessment Code (RAC) (Use highest code)				**L**	
CONTRACT NUMBER:		**RAC Matrix**					
DATE Prepared	3/4/20						
Prepared by (Name/Title):	Josh Painter / Safety Manager	**Severity**	**Probability**				
Reviewed by (Name/Title):							
Notes: (Field Notes, Review Comments, etc.)	RAC Chart		Frequent	Likely	Occasional	Seldom	Unlikely
	E = EXTREMELY HIGH	Catastrophic	**E**	**E**	**H**	**H**	**M**
	H = HIGH RISK	Critical	**E**	**H**	**H**	**M**	**L**
	M = MODERATE RISK	Marginal	**H**	**M**	**M**	**L**	**L**
	L = LOW RISK	Negligible	**M**	**L**	**L**	**L**	**L**
	Step 1: Review each “Hazard” with identified safety “Controls”. Determine RAC (See above)						
	Probability: likelihood the activity will cause a Mishap (near-miss, incident or accident). Identify as Frequent, Likely, Occasional, Seldom or Unlikely.						
	Severity: the outcome if a mishap occurred. Identify as Catastrophic, Critical, Marginal, or Negligible						
	Step 2: Identify the RAC (probability vs. severity) as E, H, M, or L for each “Hazard” on AHA. Annotate the overall highest RAC at the top of AHA.						

Job Steps	Hazards	Controls	RAC
Mobilizing to site	• Driving to site	• Always using a seat belt while driving. Always observe posted speed limits, traffic signs and signals. • Never using a cell phone or two-way radio while driving. • Violating these rules may result in loss of Jacobs driving privileges.	**L**
Unloading Supplies	• Manual lifting	• Jacobs personnel must notify supervisors or safety representatives of preexisting medical conditions that may be aggravated or re-injured by lifting activities, especially lifting operation involving repetitive motions. • When lifting objects, lift using legs not back. For repetitive lifting tasks, the use of lifting braces/supports may be considered. Use heavy equipment to transfer heavy or awkward loads wherever possible. Have someone assist with the lift—especially for heavy (> 40 lbs.) or awkward loads. Do not attempt to manually lift objects that should otherwise be lifted with heavy equipment. • Plan storage and staging to minimize lifting or carrying distances. Make sure the path of travel is clear prior to the lift. Avoid carrying heavy objects above shoulder level.	**L**
	• Cuts and Abrasions	• Wear cut resistant work gloves when the possibility of lacerations or other injury may be caused by sharp edges or objects. • Do not use razor knives. • Cut away from the body and never towards another worker. • Maintain all hand and power tools in a safe condition. Remove damaged hand and power tools from service.	**L**
	• Biologicals	• Prior to starting field activities, notify supervisors of known allergies to stinging insects and location of antidotes. • Use insect repellant with DEET or other insect repellent to deter being bit by mosquitoes or other stinging/biting insects. • Avoid exposure to blood borne pathogens if first aid must be provided. Use universal precautions against exposure to blood borne pathogens. • Observe ground surfaces, enclosed structures, ground water well heads, surrounding vegetation other site features for presence of spiders, bee/wasp hives, ticks, chiggers and other stinging/biting insects. • Where exposure to poisonous plants that have oils, berries or needle-like projects could cause skin irritations, infections or allergic reactions use disposable coveralls for protection. • Tape pant legs to boots and ensure there are no open seams between boots and pant legs to minimize potential for access points for stinging/biting insects.	**L**

	• Walking on site	• Clear walkways work areas of objects. • Institute and maintain good housekeeping practices. • Observe/avoid debris in a work area. • Only walk or climb only on surfaces designed for personnel access. • Be aware of poor footing and potential slipping and tripping hazards in the work area (holes, ditches, rip rap, utilities, and wet surfaces). Observe and avoid areas of unprotected holes and ground penetrations or protrusions. Employees walking in ditches, swales and other drainage structures adjacent to roads, across undeveloped land or in controlled industrial work/process areas must use caution to prevent slips and falls, which could result in twisted or sprained ankles, knees, and backs. • Sturdy work boots that provide ankle support shall be used during field operations. • If walking in areas of tall grass that hinders your ability to see the ground, wear snake gaiters/chaps to protect from snake bits.	**L**

Equipment to be Used	**Training Requirements/Competent or Qualified Personnel name(s)**	**Inspection Requirements**
• First Aid/ bloodborne pathogen /CPR shield • Communication devices	• Follow HSP training requirements. • 1st Aid/CPR (minimum of two personnel per site) when access to a medical facility or physician is more than 5 minutes away.	• Visual Inspections of designated work areas identify and address hazardous conditions. • Emergency Response equipment Inspections. • (Fire Extinguishers, Eye wash First Aid/CPR etc.)

PRINT NAME	SIGNATURE	
Supervisor Name:		Date/Time:
Safety Officer Name:		Date/Time:
Employee Name(s):		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:
		Date/Time:

Attachment 10
Stop Work Order Form

Stop Work Order

REPORT PREPARED BY:

Name:	**Title:**	**Signature:**	**Date:**

ISSUE OF NONPERFORMANCE:

Description:	Date of Nonperformance:
	_____

SUBCONTRACTOR SIGNATURE OF NOTIFICATION:

Name:	**Title:**	**Signature:**	**Date:**

**** Corrective action is to be taken immediately. Note below the action taken, sign and return to the HSM. Work may not resume until authorization is granted by HSM.***

SUBCONTRACTOR'S CORRECTIVE ACTION

Description:	Date of Nonperformance:
	_____

SUBCONTRACTOR SIGNATURE OF CORRECTION

Name:	**Title:**	**Signature:**	**Date:**